

Upper Briggs Restoration Project - Wildlife Report & Biological Evaluation

**Wild Rivers Ranger District, Rogue River-Siskiyou National Forest, Josephine County,
Oregon**

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Contents

Contents.....	2
1. Summary	3
2. Proposed Action and Alternatives.....	5
3. Background – Terrestrial Wildlife	7
Analysis Area.....	7
Consultation with U.S. Fish and Wildlife Service.....	7
Wildlife Policy	7
4. Design and Conservation Measures.....	7
5. Affected Environment and Environmental Consequences – Terrestrial Wildlife	8
Species Reviewed.....	8
Species Not Impacted.....	8
Species Potentially Impacted.....	9
5.1. Existing Conditions – Habitats	10
5.2. Existing Conditions – Terrestrial Wildlife	14
Federally Listed or Proposed Species.....	14
Region 6 Sensitive Species.....	17
Survey and Manage (NWFP) Species	23
Management Indicator Species (MIS).....	26
Other Species of Concern.....	27
5.3. Environmental Consequences – Terrestrial Wildlife	30
Background for Cumulative Effects.....	30
Effects to Federally Listed Species – Northern Spotted Owl.....	31
Effects to Other Wildlife Species	42
References	58
Appendix A – Mitigation measures and project design criteria	62
Appendix B – Policy	65
Appendix C – Species reviewed.....	69
Appendix D – Northern spotted owl details	72
Appendix E – Migratory and focal birds.....	75
Appendix F – Comparison of Forest Vegetation Simulator (FVS) models for Action Alternatives	79
Appendix G – Briggs Creek RTV High Priority Site Conservation Plan ... Error! Bookmark not defined.	

1. Summary

Proposed thinning and prescribed fire activities for the Upper Briggs Project intend to collectively address needs identified for the watershed and contribute to landscape-level restoration:

1. Develop and enhance late successional habitat structure
2. Retain and restore pine-oak habitats.
3. Restore habitat suitability to retain sensitive plants that are shade-intolerant.
4. Restore meadow systems by treating encroachment.
5. Restore riparian reserves to attain Aquatic Conservation Strategy objectives defined by the Northwest Forest Plan.

Connected actions include: temporary road and landing construction, road maintenance, timber hauling, and activity fuels management. The analysis area includes matrix, riparian reserves, special wildlife sites and northern spotted owl critical habitat.

Summary of Terrestrial Wildlife Effects

The ESA determination for the federally listed northern spotted owl (NSO) and designated critical habitat is *may affect, and likely to be adversely affected* (LAA) by project activities. NSO suitable nesting, roosting, foraging habitat would be treated and downgraded on ridgelines where relative habitat suitability is low for spotted owls. A small amount of dispersal habitat would be removed for meadow restoration. These activities would also occur within designated critical habitat for NSO.

Anticipated project effects for all other Region 6 sensitive species listed in Table 1 may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause loss of viability to population or species (MIIH). Furthermore, continued viability is expected for Siskiyou National Forest management indicator species (MIS) with habitat affected by the project.

Table 1. Summary of effects analysis for wildlife species for the Upper Briggs Creek Restoration Project.

Common Name	Summary of Effects
Northern spotted owl (ESA threatened, MIS)	May affect, and likely to adversely affect (LAA) through downgrade of up to 550 acres of nesting, roosting, foraging habitat, 509 of which are within designated critical habitat (dispersal function will be maintained). Long-term benefits include increased development of high quality NRF habitat and increased fire resilience from strategic fuel treatments throughout the watershed.
<i>R6 Sensitive</i>	
Pacific fisher	Habitat present, disturbance and reduction of canopy cover and incidental loss of mistletoe brooms and down wood from thinning and burning treatments may have short-term impacts in 9 percent of existing habitat and long-term in 12 percent (ridgeline FMZ). Pine-oak restoration and other treatments that promote large hardwoods (cavity dens) and late successional habitat would benefit this species.
Pacific (coastal) marten (also MIS)	Habitat present, may be impacted by disturbance and reduction of understory cover and complexity particularly in FMZ units, treatments that increase understory complexity and development of late successional habitat would benefit this species.

Lewis' woodpecker	Habitat present, may be impacted from disturbance and incidental loss of snags for danger tree mitigation, treatments that increase open pine and pine-oak habitat and development of future large snags would benefit this species (FMZ units and pine-oak restoration).
White-headed woodpecker	Habitat present, may be impacted from disturbance and incidental loss of snags for danger tree mitigation, treatments that increase large open pine habitat and development of future large snags would benefit this species (FMZ units and pine-oak restoration).
Purple martin	Habitat present, may be impacted by disturbance and incidental loss of snags for danger tree mitigation. Treatments that increase riparian habitat diversity, meadow restoration and forest edge habitat complexity and snag development would benefit this species.
Oregon shoulderband (snail)	Unlikely inhabitant of the project area. May be impacted by disturbance of suitable rocky riparian habitat with hardwood component particularly in the spring when snails are most active. Treatments that increase deciduous diversity in riparian habitat and promote future large down wood would benefit this species.
Travelling sideband (snail)	Presence is widespread in project area. Individuals and habitat (stands with deciduous trees, down wood and rocky soils) may be impacted by ground disturbing activities (felling, yarding, burning), particularly in spring when they are most active.
Franklin's bumble bee, western bumble bee	Presence is unlikely. May be impacted by short-term reduction of nectar and pollen sources from understory thinning and burning. Disturbance or destruction of ground nests possible with ground disturbing activities. Would benefit from long-term increase in nectar and pollen expected in treatments that increase understory flowering hardwoods, shrubs and forbs and restore meadow and open pine-oak habitats.
Coronis fritillary	Transitory presence suspected. Habitat with <i>Viola halli</i> host plant would not be impacted by this project, however adults may be impacted by disturbance or short-term reduction of nectar plants from treatment activities. Activities that increase flowering shrubs and forbs would benefit this species.
Johnson's hairstreak	Habitat present, individuals (eggs, caterpillars, pupae) and habitat may be impacted by thinning and burning activities where suitable dwarf mistletoe host is disturbed or removed. May benefit from treatments that develop and enhance late successional habitat and increase nectar sources.
Pallid bat	Habitat present, individuals and habitat may be impacted by disturbance and incidental loss of habitat (large snags) for danger tree mitigation.
Fringed myotis	Habitat present, individuals and habitat may be impacted by disturbance and incidental loss of habitat (large snags) for danger tree mitigation.
<i>MIS</i>	
Pileated woodpecker	At the forest scale, the project may cause minimal loss of snag habitat to danger tree mitigation, and treatments that enhance and develop late successional habitat would promote a small (1%) increase in habitat at the forest level.
Other woodpeckers	Minimal loss of snag habitat (danger trees) at the forest scale, project would have less than 1% contribution to open pine and oak habitats at the forest scale.
Deer & elk	Minimal loss of hiding or thermal cover in FMZ units, and small increase (1%) in cover and foraging habitat from treatments that enhance or rejuvenate shrubs and forbs at the forest scale.

2. Proposed Action and Alternatives

A detailed description of proposed activities can be found in the Upper Briggs Restoration Project Environmental Assessment (EA), specialist reports and supporting documents.

Proposed activities meet objectives and comply with the standards and guidelines outlined in the Siskiyou National Forest Land and Resource Management Plan (USDA Forest Service 1989), as amended by the Northwest Forest Plan (USDA Forest Service and USDI Bureau of Land Management 1994). In addition to the Proposed Action (Alternative 2) and Alternative 3 described below, this analysis includes consideration of taking “No Action” (Alternative 1) which would be no treatment of any kind.

Proposed Action – Alternative 2

Proposed Action (Alternative 2) is to treat approximately 4017 acres of the Upper Briggs Creek watershed to achieve the identified ecological need for each treatment unit (eg. develop and enhance late successional habitat, pine/oak restoration, etc). Silvicultural prescriptions and fuel treatments are tailored for each objective and described in more detail in the Project silvicultural and fuels reports.

Approximately 71% of proposed treatment acres are within stands that have had past harvest including clear cuts, salvage, shelterwood, seed tree, pre-commercial thinning, etc. The remaining unmanaged stands lack structural complexity due to fire exclusion starting in 1906 (Metlen et. al. 2016) which has resulted in dense ingrowth of shade tolerant Douglas-fir. This leads to a dense even-aged mid-story of trees incapable of developing crown depth, large boles, and large branches desired for high quality NSO habitat. Treatment of all stands would involve variable density thinning to reduce ingrowth and ladder fuels, increase species diversity and stand complexity and restore habitat features such as meadow, pine-oak woodlands and certain rare plant occurrences. Legacy trees greater than 120 years in age would be retained in treatment units.

Units with the objectives of develop and enhance late successional habitat (DELSH), roadside fuel management zones (FMZ) and riparian restoration would maintain tree size, basal area and canopy cover to meet NSO nesting, roosting, foraging and dispersal habitat where these conditions exist.

Pine-oak and rare plant restoration is proposed in stands on south-facing slopes that currently contain a large proportion of pine and oak tree species within the stand as well as ingrowth of young (< 80 year) Douglas-fir. The treatment prescription for these units is to achieve an average of 40% canopy cover for the unit with variable density thinning to highlight the natural distribution of pine and oak trees within the stands. Legacy trees (greater than 120 years) including large Douglas-fir would be retained and would create areas of higher canopy cover.

Because stand complexity is desired, treatments described above would include the creation of small gaps (less than ¼-acre) and skipped areas (to protect legacy trees, sensitive plants, riparian buffers, large existing snags and large down wood). Gaps, inclusive of other openings (roads, landings, yarding corridors, etc.), would not exceed 20 percent of the unit area.

Several ridgelines on the boundaries of the Upper Briggs watershed have held fires from taking over the watershed in the past including Biscuit, Oak Flat and Onion Mountain. The strategic ridgeline FMZ prescription is proposed along portions of these ridgelines and additional ones to provide continuous linear locations that could be effectively used for retardant or burn-out during suppression activities and ideally for prescribed fire holding lines. These treatments would achieve average canopy cover of 40% across the unit in order to decrease ladder fuels created by the cohort of Douglas-fir that have grown-in under the legacy overstory. Legacy trees (greater than 120 years)

would be retained. Increasing the fuel separation between the ground and the overstory increases the possibility that fire will stay under the canopy on the ridges especially during fuels treatment and underburning. With the legacy tree and riparian primary shade zone retention, some areas in these units may retain canopy cover above 40% where there are clumps of large legacy trees and riparian areas.

Logging systems may include ground-based (tractor), skyline and helicopter systems. Approximately 12 percent of the acreage would be harvested via tractor, 22 percent via skyline, and 5 percent helicopter. Remaining treatment acres (approximately 60%) would involve hand cutting, piling, lop and scatter, or short-distance yarding (eg. yoder) to achieve thinning objectives.

Prescribed fire would be used periodically to maintain desired habitat structure (pine-oak woodlands, ridgeline fuel break, etc). Burn frequency would depend on the rate of vegetation regrowth and ground fuel accumulation. Underburning would be done to create a mosaic of burned and unburned areas within a stand.

Treatments would be applied to restore historic boundaries of these meadows based on 1940 air photos to the extent possible by removing all conifers within these boundaries but retaining legacy trees (greater than 120 years) and hardwoods > 10" DRC. Pile and/or lop and scatter burning to reduce activity fuels would occur within one year of treatment. Periodic broadcast burning would be used to rejuvenate brush and grasses that benefit from fire, but would not burn the entire area of the meadow to provide refugia for insects, other wildlife and native plants that inhabit these meadows.

Meadow restoration would also include removal and control of invasive plants and planting or seeding of native plant species such as elderberry, native grasses and native flowers that benefit pollinators.

Invasive weed treatments using mulch or burning at times that would be most effective for interruption of weed propagation, hand pulling and seeding competitive native grasses and forbs would be considered and implemented as appropriate for the site.

Road status changes include converting 1.6 miles of maintenance level 1 roads to storage status and decommissioning 11.1 miles. In addition, 4 stream crossings have been identified on maintenance level 1 roads for stormproofing.

The proposed action includes all design criteria and conservation measures outlined in appendix A and the EA. They include measures to prevent or lessen impacts to legacy trees, existing dead wood, red tree voles and northern spotted owls.

Connected actions include treatment of activity fuels and periodic maintenance burning (prescribed underburning) in all units. Prescribed underburning may occur every 3-5 years or longer depending on accumulation of ground fuels and objectives for burning (DELSH units are not expected to require underburning as often as fuel management zones (FMZs)). About 1.5 miles of new, temporary spur road would be built then decommissioned following completion of operations. Routine road maintenance and reconstruction of existing roads would occur. Danger tree and snag felling could occur along haul routes and near work areas.

Alternative 3

Alternative 3 includes the same treatment objectives described alternative 2, however the total area treated (2,628 acres) would only treat units that are under 80 years in stand age and implements a 120 foot no-treatment buffer on streams. Existing roadbeds would be used for harvest and no new temporary roads would be constructed.

Table 2 shows the difference in treatment acres for each objective proposed by each action alternative. These acres are displayed differently than acreage in the EA which accounts for overlap of treatments on the same location. Acres in Table 2 are the primary treatment objective for a given unit which may include other habitat objectives (such as sensitive plant enhancement), however the primary treatment objective is what drives the mechanism for effects to wildlife

species discussed later.

Table 2. Comparison of Alternative 2 and 3 Primary Treatment Objective Acres for Upper Briggs Restoration Project and Percent of Upper Briggs Creek Watershed treated.

Primary Treatment Objective	Alternative 2 Acres Treated	Alt 2 % Watershed	Alternative 3 Acres Treated	Alt3 % Watershed
DELSH	1053	4%	556	2%
Riparian Restoration	183	<1%	128	<1%
Roadside FMZ	713	3%	824	3%
Pine Oak	706	3%	479	2%
Rare Plants	42	<0.5%	42	<0.5%
Meadow Restoration	188	<1%	126	<1%
Ridgeline FMZ	1132	4%	473	2%
Total Acres	4017	16%	2628	11%

3. Background – Terrestrial Wildlife

Analysis Area

Project effects to wildlife are evaluated by number of known sites affected, acres of impacts or changes to specific habitat(s), and extent, duration and timing of disturbance. The scale and methodology for evaluating effects differ by species based on their habitat requirements and the type of status they have. In general, the Upper Briggs Creek watershed is used as the analysis area. The Upper Briggs Creek watershed is approximately 24,650 acres of which less than 2% is privately owned and the rest managed by the RRSNF.

More detail about analysis areas and methods is provided in the effects analysis for each species. Furthermore, mandatory and recommended Project Design Features are discussed for each species as appropriate.

Consultation with U.S. Fish and Wildlife Service

During development of the Upper Briggs project, the Forest Service began early conversations with the U. S. Fish and Wildlife Service (USF&WS) on potential effects to federally listed wildlife species. This included a field visits to Upper Briggs on February 12, 2015 and February 17th, 2016 with the Rogue Basin level 1 team.

The Forest Service conducted formal consultation with the Fish and Wildlife Service. All activities would be implemented consistent with project descriptions and mandatory project design criteria (PDCs) identified in the final biological assessment and the Service's corresponding biological opinion.

Wildlife Policy

A list and description of wildlife policy relevant to this project can be found in appendix B. It covers the Endangered Species Act (ESA federally listed species), FS Region 6 sensitive species, Northwest Forest Plan survey and manage species, Forest Service management indicator species, migratory birds and pollinators.

4. Design and Conservation Measures

See appendix A for the complete list of measures anticipated to prevent or minimize the risk of adverse effects to wildlife species as described in this analysis of project effects. Measures

include all mandatory project design criteria (PDCs) from relevant consultation documents and standards and guidelines from the Siskiyou National Forest Land and Resource Management Plan (USDA Forest Service 1989).

5. Affected Environment and Environmental Consequences – Terrestrial Wildlife

Species Reviewed

The full list of species reviewed can be found in appendix C. We reviewed all terrestrial wildlife species which are documented or suspected to occur on the Rogue River-Siskiyou National Forest and are designated as sensitive within USFS Region 6 (Pacific Northwest Region). This includes species which are federally listed or proposed for listing. Appendix C lists these species by common name, scientific name and primary habitat.

In addition, we reviewed survey and protection requirements for species listed as survey and manage under the Northwest Forest Plan (December 2003 species list but with red tree vole as category C and giving special consideration to 12 species), assessed the population viability of management indicator species (MIS) from the Siskiyou National Forest LRMP, and assessed project impacts on groups of species covered under a presidential executive order or an agency memo of understanding (e.g. migratory birds).

Species Not Impacted

Table 3 lists regionally sensitive species whose occurrence are neither documented nor suspected on Wild Rivers Ranger District. Because their ranges are unlikely to overlap the analysis area, they are not being analyzed further.

Table 3. Federally listed and regionally sensitive wildlife species (9) not analyzed further because their known ranges do not overlap the area of impacts. These species are not suspected to occur on Wild Rivers Ranger District.

Common Name	Common Name	Common Name
Gray wolf (endangered)	Siskiyou Mountains salamander	Modoc Rim sideband
Oregon spotted frog (threatened)	Sierra Nevada red fox	Siskiyou short-horned grasshopper
	Siskiyou hesperian	Coastal greenish blue butterfly

Table 4 lists regionally sensitive species whose occurrence is either documented or suspected on the Wild Rivers Ranger District, however there is no habitat for these species in the project area that would be affected by project activities. No impacts are anticipated to these species and rationale is provided in the table. These species will not be analyzed further.

Table 4. Regionally sensitive wildlife species (15) not analyzed further because no measurable impacts to primary habitat would occur or species is unlikely to be present in project area.

Common Name	Rationale for No Impact
Marbled Murrelet	Project is not within occupied habitat or critical habitat for the marbled murrelet. The project overlaps survey zones considered to have a low likelihood of murrelet presence. Any impacts to murrelets in these two zones are considered negligible. (USFWS 2002, letter to RRSNF and Medford BLM, and USFWS 2002 Technical Assistance on the Final Results of Landscape level Surveys for Marbled Murrelets in Southwest Oregon [FWS reference: 1-7-02-TA-6401].

American peregrine falcon	No activities near a known eyrie or a cliff suitable for an eyrie. Nearest known eyrie is 6 miles from the Upper Briggs Creek watershed.
Bald eagle	No known nest trees or large body of water within 1 mile of project. Nearest suitable nesting habitat is 7 miles away along the Rogue River. Large legacy trees will be retained in treatment units.
Harlequin duck	Streams in the project are smaller and lack braided channels compared to streams used by harlequin ducks. Project would include a 25 ft no-cut buffer for perennial streams, no impacts anticipated that would affect habitat suitability. Nearest occurrence is S. Fk. Coquille River. No known occurrences in Josephine County – unlikely inhabitant of the project area.
Northern waterthrush	No activities in bogs or wet areas with riparian thickets of willow and other vegetation. These birds are not known in Josephine County and not likely in the project area. Nearest recorded sightings are in coastal wetlands at Nesika and Harris Beach.
Tri-colored blackbird	No activities in open wet marshy areas with cattails, bulrush, blackberries. There is very little of this habitat in the project area. This species is an unlikely inhabitant of the project area.
White-tailed kite	These birds are associated with low elevation valleys and deciduous woodlands, large grassy areas and agricultural fields. Generally avoid areas with extensive winter freezes. Not likely to be present in project area; nearest documented sighting is 20 miles NW of project area along the Rogue River.
Mardon skipper	No habitat for this species in the project area. Butterfly surveys in Horse Creek Meadow have not detected this species; it is a very dry meadow, heavily impacted from past grazing, and lacks the grass and soil characteristics of habitat where this species is found. Nearest known population is 25 miles west.
Gray blue butterfly	No wet, lush high elevation meadow habitat with shooting star host plant present in the project area. Nearest known population is 26 miles southeast.
Fringed myotis	No activities that would affect caves, mine adits, abandoned buildings or large bridges.
Black salamander	This species is only confirmed in the Applegate watershed on the RRSNF. Historic site records near Cave Junction are uncertain. The known range of this species does not include the Upper Briggs Creek watershed.
Foothill yellow-legged frog	No activities that would affect suitable habitat for these frogs. Project BMPs and standards and guidelines for riparian reserves would protect stream habitat. No records of this species in the Upper Briggs watershed.
Western pond turtle	No activities that would affect suitable habitat for these turtles. Project BMPs and standards and guidelines for riparian reserves would protect streams and other wet riparian habitat. Low likelihood of presence in the project area due to shallow streams lacking deep pools and sunny basking sites. The pond in Horse Creek meadow is occupied by bullfrogs, no turtles have been seen there in recent years.
Townsend's big-eared bat	No activities that would affect caves, mine adits, abandoned buildings or large bridges.
Wolverine	2 wolverine visual records south of the Kalmiopsis Wilderness in 1987-88; unknown reliability. No known records since; considering the level of human activity in the project area and lack of alpine and sub-alpine ecosystem, wolverines are unlikely inhabitants of the project area.

Species Potentially Impacted

Following are those regionally sensitive species and Siskiyou National Forest management indicator species (MIS) analyzed further because their habitat or individuals might be impacted by activities. All adverse impacts are minimal and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

R6 Sensitive:

Pacific fisher	White-headed	Oregon shoulderband
Pacific (coastal) marten	woodpecker	Travelling
Lewis' woodpecker	Purple martin	shoulderband

Franklin's bumble bee

Coronis fritillary

Pallid bat

Western bumble bee

Johnson's hairstreak

MIS: Spotted owl, woodpeckers, Pacific marten, deer & elk

5.1. Existing Conditions – Habitats

The Upper Briggs Project is located approximately eleven miles west of Grants Pass, Oregon. The project boundary is the Upper Briggs Creek 6th level watershed, entirely within the Briggs Creek 5th level watershed. Elevations ranges from 2,000 feet on the valley floor to approximately 4,400 feet on both Taylor Mountain at the northwest boundary of the watershed and Onion Mountain on the southeast boundary.

The Project is located within a region where fire is recognized as a key natural disturbance process that influences succession and creates diverse forest conditions (Atzet and Wheeler, 1982). Prior to the age of fire suppression, which began in the early 20th century, wildfires of varying intensities regularly burned throughout this region and regulated stand densities, maintained open meadows and favored pine and hardwoods including black and white oak, canyon live oak and tanoak particularly on south-facing aspects and ridgelines.

Years of fire exclusion, timber harvest, road building, mining, and homesteading have simplified habitats and created more extreme fluctuations in disturbance processes. Forested stands have high densities of small trees and many young or open forested stands have high densities of tall brush, primarily tanoak. Many stands containing large legacy mixed conifer, black oak and madrone are experiencing a shift in species composition to predominantly Douglas-fir. Air photos from the 1940's indicate that many stands on the valley floor had more open understories intermingled with dry and wet meadows which are now much smaller in size.

The entire watershed is in the Oregon Klamath Province with current and historic NSO occupancy. While some areas of high quality habitat (including high quality nesting, roosting and foraging (NRF) habitat) are present, many forested stands lack large trees > 30inches dbh, decadence components, and desired multi-layered canopies. Although the historic fire regime is believed to have benefitted spotted owls, uncharacteristically severe wildfire is considered the greatest current threat to owl habitat in the Klamath Province. According to the 2012 NSO Recovery Plan Appendix B, the Oregon Klamath Province experienced the greatest amount of habitat loss on federal lands of all provinces between 1996 and 2006 due to wildland fire (93,600 acres) much of this was in the 2002 Biscuit Fire which burned in watersheds adjacent to the west boundary of the Upper Briggs watershed. Burned Area Reflectance Classification (BARC) data from two wildland fires that have burned within the Upper Briggs watersheds since 2010 estimate that 1.6% of the watershed has experienced high severity fire and 7.5% has experienced moderate severity since 2010. Forest fire start history data indicate that between 1972 and 2015 there were 97 fire starts in the Upper Briggs Creek watershed. Of these, 40 were lightning caused, 51 were human caused, and 6 were unknown cause.

Approximately 20% of National Forest lands in the Upper Briggs Creek watershed are managed stands with past timber harvest including plantations ranging from 20 to 67 years in age. Of the remaining 19,377 acres in the watershed, approximately 3,923 acres are influenced by serpentine soils and outcrops. Meadow habitats (non-serpentine) are variable in size and consist of grassy areas with patches of brush, conifer and hardwood cover. Horse Creek Meadow is currently the largest meadow in the watershed that has been routinely treated for brush encroachment through brush-cutting and prescribed fire.

Furthermore, forested habitat in the watershed includes a considerable amount of hardwoods that commonly occur with a mix of conifer species such as Douglas-fir, incense cedar and ponderosa pine. These hardwood species are primarily Pacific madrone (*Arbutus menziesii*), tanoak (*Lithocarpus densiflorus*), canyon live oak (*Quercus chrysolepis*), California black oak (*Quercus kelloggii*) and Oregon white oak (*Quercus garryana*). A combination of these hardwood species is often present in

any given stand. According to the 2014 modified GNN vegetation data (Oregon State LEMMA GNN data derived from 2012 satellite imagery published in August 2014 <http://lemma.forestry.oregonstate.edu/data/structure-maps>), approximately 19,741 acres of the watershed have at least 2% canopy cover in hardwood. Any one of these species is represented as the dominant hardwood in approximately 10,195 acres (41%) of the watershed. Table 5 provides a breakdown of these acres by species.

Table 5. Acres with dominant hardwoods within the Upper Briggs Creek Watershed.

Common Name	Acres	%Watershed
Pacific Madrone	4,340	18
Tanoak	3,370	14
Canyon Live Oak	1,687	7
California Black Oak	546	2
Oregon White Oak	84	<1
Total	10,195	41

The 2014 modified GNN data also estimate 42% of the watershed in moderate to closed-canopy large conifer-dominant habitat ($\geq 40\%$ canopy cover, $\leq 37.5'$ DBH) and approximately 3% of open-canopy large conifer-dominant habitat ($<40\%$ canopy cover, $\leq 37.5'$ DBH). The latter occurs primarily on the serpentine soils within the watershed and ages of these habitats vary depending on site productivity.

Forest Plan land use allocations in the watershed include objectives for wildlife habitat management. Over 50% of the watershed is Matrix and 17% is Late Successional Reserve. No activities are proposed in mapped or unmapped LSR.

Riparian reserves make up approximately 20% of the watershed and are composed of a mix of seral stages with approximately 32% in managed stands.

One botanical area in the northeast portion of the watershed is serpentine and approximately 224 acres of special wildlife sites are also in serpentine. These wildlife sites were affected by the Oak Flat and Onion Mountain fires and no activities are proposed in them.

The largest special wildlife site in the watershed is Horse Creek (1,242 acres). Forest Plan direction for this area is to maintain or improve habitat value for multiple wildlife species (Siskiyou Forest Plan, p IV-116). The Horse Creek area is a combination of dry and wet meadow, brush, pine/oak habitat, late seral forest and riparian habitat. Historic photos and information indicate that past fire has influenced habitat diversity in this area. In fact, 18 acres of low severity fire occurred within the Horse Creek site during the 2014 Onion Mountain fire. This project aims to continue habitat maintenance with thinning, prescribed fire and other treatments to improve and retain habitat diversity in this area.

Additionally, approximately 20 miles of recreational trails and Sam Brown Campground are currently open for public use. Mining, hiking, mountain biking, ATV and motorcycle riding, dispersed camping, hunting and firewood collection are all popular uses of the watershed year-round and continue to increase. The majority of the private lands in the project area are heavily managed.

Dead Wood

Site Specific

Dead wood in treatment units is variable with most having high levels of smaller diameter and some with large (>20 -inch DBH) down wood. Down wood in several units on the southwest side of the project area is mostly knobcone pine and other units have considerable down black oak and madrone.

Snags are expected to continue to accrue in the treatment units due to stress from recent drought years and insect and disease infestations, wildland fire, and smaller to mid-size trees may be

killed from pile burning and prescribed fire in treated areas.

Watershed Scale

The Forest Service Region 6 uses the DecAID model to evaluate snag and down wood densities at the watershed scale (<http://www.fs.fed.us/r6/nr/wildlife/decaid/>). DecAID is a research-based, advisory tool to help determine reference and current conditions for large snags and other dead wood at the watershed scale (Mellen-McLean and others 2012). It is based on data from plots in unmanaged stands and provides histograms of reference (natural) and current conditions to help evaluate the effects of management activities on organisms that use decayed wood. In this model, the natural condition is the current variability in dead wood populations in forests that have never been harvested, based on a summary of ‘unharvested’ inventory plots. These inventory summaries of ‘natural conditions’ in DecAID describe variability across space at a single point in time (late 20th century). This is distinct from ‘historic variability’ concepts, which typically refer to variation over very long time periods (see Landres et al. 1999). The current condition is the actual, current forest condition given all historic and modern human disturbances (including harvests, fire management, etc).

Summary

Three large fires have burned areas of the Briggs Creek 5th field watershed in the last 10 years. Burn severity mapping for the 2010 Oak Flat and 2014 Onion Mountain fires estimate 470 acres (1 percent) of high severity and 2,170 acres (5 percent) of medium severity burn in the watershed. In addition, the 2008 Horse Mountain fire burned approximately 1,165 acres total (2 percent of watershed), but no severity mapping was available. These acres are expected to be contributing to concentrated areas of high snag densities and areas with depleted large down wood (though snags will contribute to down wood over time) for a total of 8 percent of the watershed.

Figure 1 compares the reference and current distribution of all down wood > 5 inches diameter in the watershed. The current distribution is slightly higher than reference in all but one cover class (4-6 percent cover), hence the watershed currently has a higher proportion down wood than historic conditions.

Figure 1. Distribution of down wood > 5 inches diameter per acre by cover class within the Briggs Creek fifth-field watershed for the southwest Oregon mixed conifer-hardwood forest habitat type.

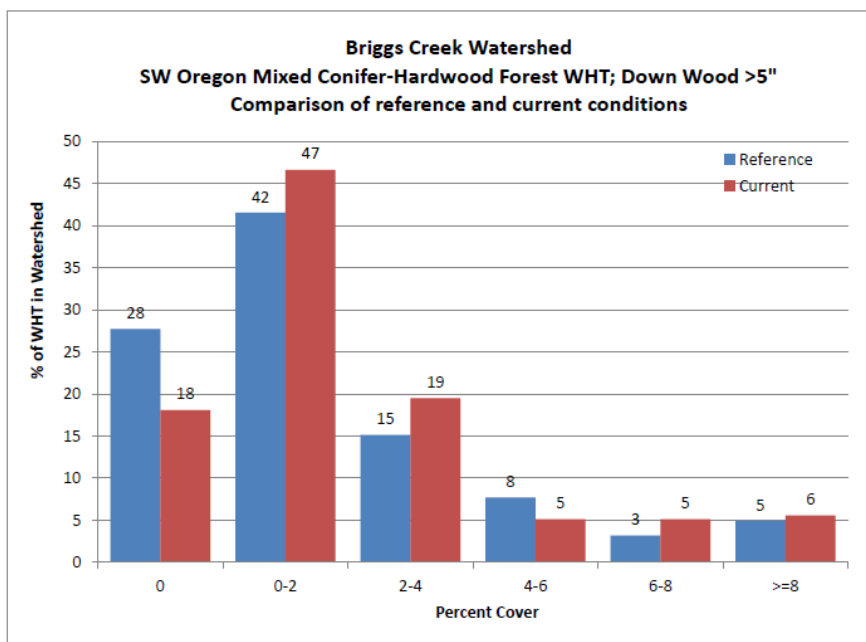


Figure 2 compares the distribution of large down wood (>20 inches) between current and reference

conditions. Overall, the watershed is near reference conditions but actually has more area with large down wood cover than reference conditions in the ranges of 0 to 1 and 2 to 3 percent cover.

Figure 2. Distribution of large down wood per acre by percent cover within the Briggs Creek fifth-field watershed for the southwest Oregon mixed conifer-hardwood forest habitat type.

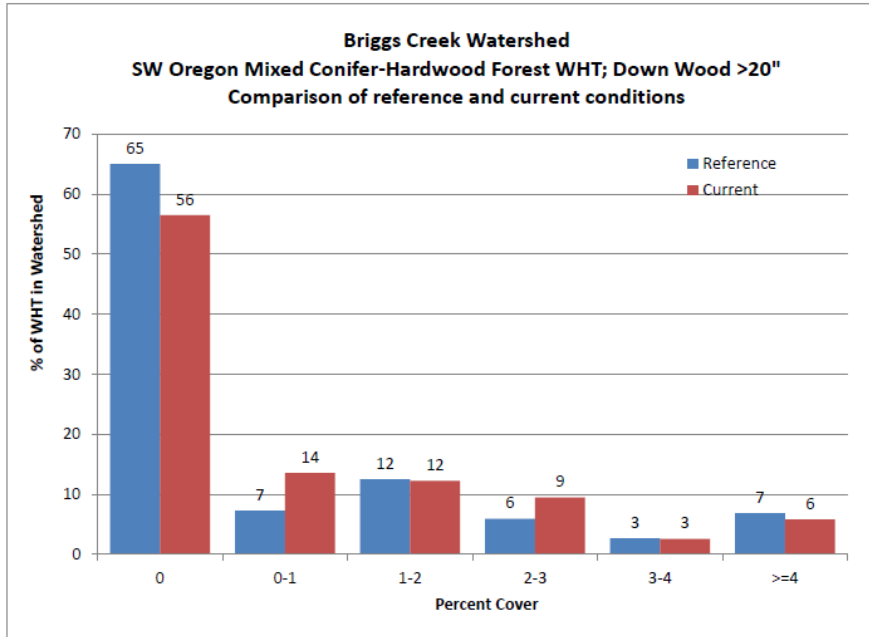
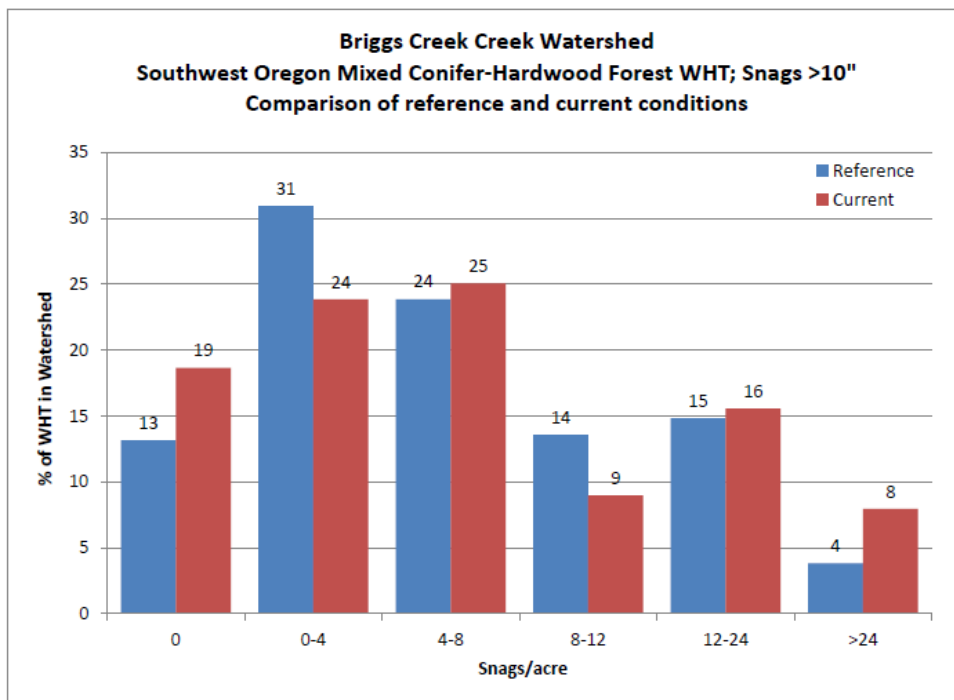


Figure 3 compares the current and reference distribution of all snags >10 inches diameter per acre in the watershed. Overall, current snag levels are approximately 6 percent lower than reference (19 vs 13 percent of watershed with 0 snags per acre) with deficiencies in the ranges of 0-4 and 8-12 snags per acre. However, the watershed is above reference condition in higher snag densities (>24 per acre).

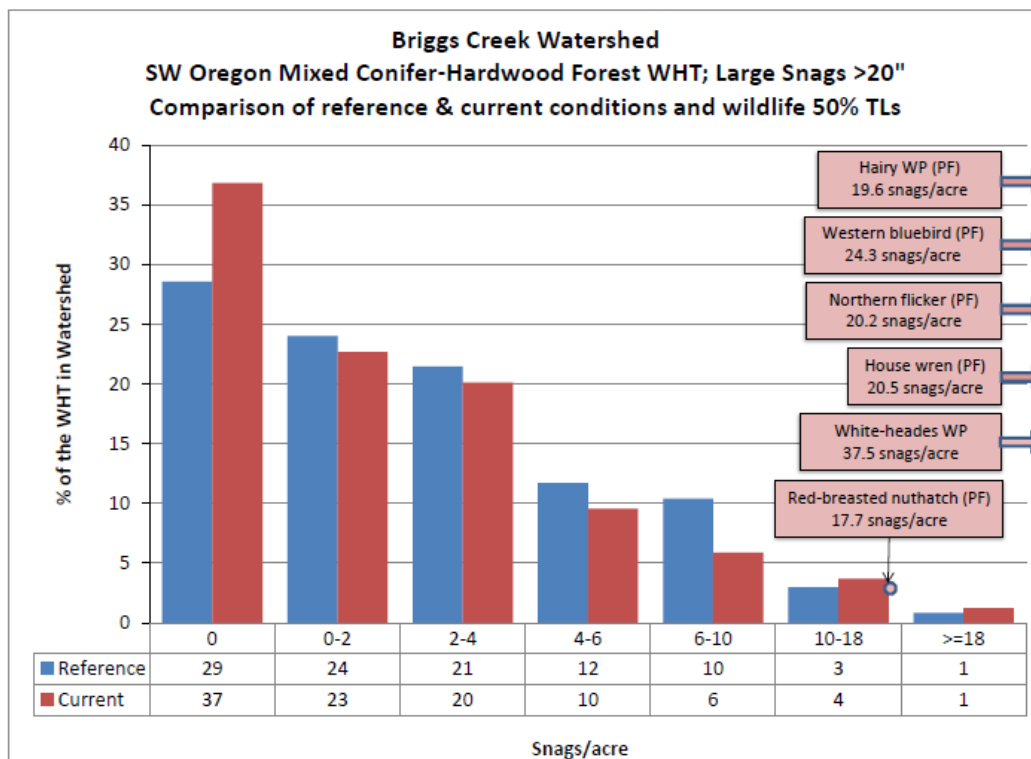
Figure 3. Distribution of all snags greater than 10 inch diameter per acre within the Briggs Creek fifth-field watershed for the southwest Oregon mixed conifer-hardwood forest habitat type.



The current distribution of snags greater than 20 inches DBH within the watershed has departed from reference data for some classes per DecAID. Figure 4 shows that 37 percent of the Briggs Creek 5th-field watershed has no measurable snags per acres which is an 8 percent larger proportion than the reference (historic) condition (29 percent), therefore the watershed is generally deficient in snags. This is apparent in the four density classes that represent 0 to 10 trees per acre.

Figure 4 also displays the 50 percent tolerance levels for certain bird species. These tolerance levels indicate the density of snags per acre that 50 percent of individuals would use, while the other 50 percent would use a higher density (for example, 50 percent of red breasted nuthatches would use habitat with approximately 18 snags per acre and the other 50 percent would use habitat with more snags per acre). Currently, we are slightly above the historical level of 18 or more snags per acre however this occurs in only 1 percent of the watershed, which is a very small amount when looking at the tolerance levels of many other bird species.

Figure 4. Distribution of large snags per acre by within the Briggs Creek fifth-field watershed for the southwest Oregon mixed conifer-hardwood forest habitat type.



5.2. Existing Conditions – Terrestrial Wildlife

Federally Listed or Proposed Species

Four species listed under the Endangered Species Act are known to occur on the Rogue River-Siskiyou National Forest: marbled murrelet (threatened), northern spotted owl (threatened), gray wolf (endangered) and Oregon spotted frog (threatened).

Gray wolf would not be affected by proposed activities, so they are not analyzed further. Wolves have not been documented, nor are suspected, on the Wild Rivers Ranger District. The nearest documented occurrences are over 50 miles east in the Southern Cascades.

Oregon spotted frog would not be affected by proposed activities so they are not analyzed further. These frogs have not been documented, nor are suspected in the Upper Briggs Creek watershed. Nearest known occurrences are over 50 miles east in the Southern Cascades.

Marbled murrelet would not be affected. The project is not within occupied habitat or critical habitat for the marbled murrelet. The project overlaps a portion of survey zones C and D for which surveys are not required due to the low likelihood of murrelet presence in these zones and any impacts to murrelets in these two zones are considered negligible. (USFWS 2002, letter to RRSNF and Medford BLM, and USFWS 2002 Technical Assistance on the Final Results of Landscape level Surveys for Marbled Murrelets in Southwest Oregon [FWS reference: 1-7-02-TA-6401]).

Northern spotted owl would have short-term impacts with long-term benefits by proposed activities from habitat modification and disturbance. Because activities are likely to adversely affect spotted owls and designated critical habitat, formal consultation with the Service has been completed. All mandatory conservation measures (project design criteria) and terms and conditions from the biological opinion would be implemented.

Northern Spotted Owl

A more detailed description of the northern spotted owl is in appendix D. Relevant background information is summarized here.

Legal status - The spotted owl was listed as threatened in 1990 due to widespread loss and modification of suitable nesting habitat (USDI Fish and Wildlife Service 1990).

Critical habitat – 85% of the Upper Briggs Creek watershed is within critical habitat unit (CHU) K LW 2 (Klamath West). Appendix D provides additional details of this CHU and the full designation of critical habitat can be found in Federal Register notice Vol. 77, No. 233 at <http://www.gpo.gov/fdsys/pkg/FR-2012-12-04/pdf/2012-28714.pdf>.

Threats – The project area is entirely within the Oregon Klamath Province. Although the historic fire regime is believed to have benefitted spotted owls, uncharacteristically severe wildfire is considered the greatest current threat to owl habitat in the Klamath Province. According to the 2011 NSO Recovery Plan Appendix B, the Oregon Klamath Province experienced the greatest amount of habitat loss on federal lands of all provinces between 1996 and 2006 due to wildland fire (93,600 acres) much of this was in the 2002 Biscuit Fire which burned in watersheds adjacent to the west boundary of the Upper Briggs watershed. In addition to loss of habitat to severe wildfire, competition from barred owls is also considered as one of the most pressing threats to the spotted owl. Disease and the effects of climate change were identified as potential threats (USDI Fish and Wildlife Service 2011b).

Population and habitat trends – Recent range-wide meta-analysis for data through 2013 showed a range-wide, spotted owl population decline of 3.8 percent annually and an overall decline in occupancy rates in Oregon (Katie M. Dugger et al. 2016). The realized population decline in Oregon since 1990 is from 31 to 64 percent. Dugger et al. also indicated that barred owl presence is having a strong positive effect on overall NSO extinction rates and a strong negative effect on colonization rates in some areas. The 2015 NWFP 20-year monitoring report estimate a net decrease of 6.7 percent in nesting/roosting habitat on federal lands in the Oregon Klamath Province since 1993 (Davis and others 2016). The decrease takes into account the loss of habitat to wildfire, timber harvest, insects and other causes; with some of those losses offset by forest succession. For this province, wildland fire accounted for 9 times more acreage lost than timber harvest. Dispersal habitat also had a net loss of 4.4 percent on federal lands with a similar degree of habitat loss due to wildfire.

Survey history – Protocol surveys of all owl suitable nesting habitat (NRF) occurred in both 2014 and 2015 within the planning area. Three additional surveys were conducted in 2016. Historic owl nest sites were also searched. One NSO pair was detected at one site in early 2014, but no reproduction was confirmed and only a male was detected at the site in 2016. Territorial males were detected at 2 additional sites along with barred owls in 2014 and 2015. There were no NSO or barred owl responses within the planning area in 2016. Because surveys may not continue to occur through the duration of the project, known sites and unsurveyed suitable NRF habitat outside of

known nest patches will be assumed to be occupied and certain project activities would be restricted to minimize disturbance during the critical breeding season described in appendix A.

Description of suitable owl habitat – In the Oregon Klamath Province, owl dispersal-only habitat is forest stands with average tree diameters are ≥ 11 inches DBH, canopy closure is ≥ 40 percent and there is enough open space beneath the canopy for an owl to fly through. Nesting, roosting and foraging (NRF) habitat for owls is generally older than 80 years with average tree diameter of 21 inches DBH, basal areas between 180 and 240 square feet/acre and canopy closure ≥ 60 percent. NRF habitat also serves as dispersal habitat and contains adequate dead wood to support owl prey species; such as, northern flying squirrels, red tree voles, wood rats and other small mammals.

Owl habitat within Upper Briggs Action Area

The Upper Briggs Project action area is the area within 1.3 miles of proposed treatment units. This distance represents the approximate home range distance of northern spotted owls in the Oregon Klamath province and provides the area for evaluating effects of project activities on owl home ranges that overlap proposed treatment units. This action area includes 30,171 acres in federal ownership of which 34% are currently spotted owl NRF habitat. Sixteen percent of federal NRF acres are in reserved land allocations (eg. LSR). In addition, approximately 36% of federal acres in the action area are currently dispersal-only habitat.

Proposed treatment units include NRF and dispersal habitat for northern spotted owls. The 2011 Revised Recovery Plan for the Northern Spotted Owl provides considerations and treatment guidelines when designing forest restoration projects (USDI Fish and Wildlife Service 2011b). During the Upper Briggs Restoration Project planning process, approximately 190 acres of high quality NRF habitat were dropped from treatment areas for habitat conservation per Recovery Action 32 of the Recovery Plan.

Furthermore, treatment objectives were influenced by the desired condition for the stand based on potential contribution to the overall function and resilience of the watershed. In addition, the MAXENT relative habitat suitability model described in the Recovery Plan was used in development of treatments based on the abiotic suitability of a site for NSO nesting habitat. For example, treatments proposed on strategic ridgelines are intended to reduce fuels and risk of high severity fire and provide opportunities to introduce prescribed fire into the watershed at a scale that would maintain certain desired habitat types such as open, late seral with large ponderosa and sugar pine, and mature oak trees. NRF habitat on these strategic ridgelines is generally considered low quality nesting habitat for spotted owls. Owls are not known to nest on these ridges; they tend to be warmer, drier and more exposed than drainages and northerly aspects commonly occupied by NSO.

Conversely, dispersal habitat that occurs in areas of high relative habitat suitability are proposed for treatments that would enhance their development into NRF (Appendix D Map 1) (USDI Fish and Wildlife Service 2011b). Furthermore, roadside FMZ treatments would include treatment in both NRF and dispersal habitats that would maintain their functionality post-treatment.

Known (historical) owl sites – There are seven NSO home ranges within 1.3 miles of the alternative 2 treatment units that overlap portions of the treatment units (Appendix D, Map 1). As mentioned previously, only one of these sites has had a pair detection in the last five years of survey.

Habitat (NRF) within the known owl sites based on the 2014 modified GNN habitat data is displayed in Table 6. The NRF minimum thresholds for owl site viability are 50 percent for the core area and 40 percent for the home range (Courtney and others 2004; Thomas and others 1990). Only one site, (Sam Brown) is at the minimum threshold for the core area. At the home range scale, two sites are at the minimum threshold (59, Sam Brown) and one site (Secret Creek) is above the minimum threshold. Sites with NRF habitat below threshold are less likely to support successful reproduction and fledging for northern spotted owls.

Table 6. Acres of NRF within potentially affected owl site nest, core and home range areas.

Owl Site #	Acres (%) of NRF Within Known Owl Sites		
	Nest Patch (300M; 70 ac.)	Core Area (1/2-mile; 500 ac.)	Home Range (1.3-mile; 3398 ac.)
50	16 (23%)	197 (39%)	1246 (36%)
55	37 (53%)	207 (41%)	1094 (32%)
59	38 (54%)	200 (40%)	1356 (40%)
60	60 (86%)	185 (37%)	948 (28%)
228	35 (49%)	151 (30%)	1007 (30%)
Sam Brown	38 (54%)	251 (50%)	1356 (40%)
Secret Creek	43 (61%)	185 (37%)	1488 (44%)

Haul routes – There are no proposed haul routes through or within disturbance distances for heavy equipment (105 feet) of a known owl site. The 2500 Road is the closest route to a known owl site, this road is paved and receives frequent traffic throughout the year when snow doesn't block access.

Region 6 Sensitive Species

The following sensitive species information is derived from more detailed species fact sheets found at the interagency special status/sensitive species program (ISSSSP) website:

<https://www.fs.fed.us/r6/sfpnw/issssp/planning-documents/species-guides.shtml>

Pacific fisher

The geographic distribution of fishers in the Pacific Coast states has been greatly reduced in extent from pre-settlement conditions. Prior to extensive European settlement, the fisher occupied most coniferous forest habitats in Washington, Oregon, and California (Aubry and Lewis 2003). Reintroduction of fishers has occurred in northern California and the Olympic Peninsula. The Rogue River-Siskiyou National Forest has fisher populations in the Siskiyou Mountains and southern Oregon Cascades with ongoing surveys and monitoring.

The fisher is one of the most habitat-specialized mammals in western North America (Buskirk and Powell 1994). Specialization appears to be tied primarily to denning and resting habitats. Rest structures chosen by fishers are often the largest diameter trees available in a particular landscape with a significantly higher canopy closure ($\geq 75\%$) immediately adjacent to the rest site and include live trees with mistletoe brooms or rodent nests, logs and cull piles, snags, and cavities in both conifers and hardwoods (Aubry and Raley 2006). Den structures in the southwest Oregon can be live trees or snags with openings that access hollows created by heartwood decay or large hollow logs. Both conifer and hardwoods can provide these structures. In an ongoing fisher monitoring study for the Ashland Forest Resiliency Project, natal and maternal dens found since 2012 have been in pine and hardwood tree (e.g. madrone and black oak) cavities with relatively small entrance holes several feet from the ground.

As with resting sites, high canopy closure (80%) within an acre or less of den sites has been shown to be important. (Aubry and Raley 2006) Reduction of canopy closure to below 80% around large live trees and snags that are clumped and large logs where there is a multi-storied stand component likely has the potential to have the most detrimental effect on potential den and rest sites. Since fishers use the largest live and dead trees for den and resting habitats, loss of these structures can also reduce habitat quality for resident animals.

While fishers require structures provided by older aged or residual stands for denning and resting,

they appear to use a broad array of stand conditions for foraging from stands with high volumes of coarse woody material, to pole-sapling forestes, edge habitats and gaps in forest cover with fruit-bearing shrubs and forbs (Weir and Harestad 2003, Jones and Garton 1994). Mammals, birds, reptiles, insects and plants have been found in the diet of fishers (Zielinski et al. 1999, Aubry and Raley 2006). There is some indication of seasonal variation in the fisher's diet which is likely linked to seasonal abundance of prey and forage species.

Riparian corridors (Heinemeyer and Jones 1994) and forested saddles between major drainages (Buck 1983) may provide important dispersal habitat or landscape linkages for fishers. A study of 7 juvenile fisher dispersals in the southern Oregon Cascades found that males dispersed an average of 29 km, and mean dispersal distance of females was 6 km. Two of the 4 females studied did not disperse from their natal areas and appeared to establish home ranges adjacent to and slightly overlapping their mother's home range (Aubry and Raley 2006). The same has been found in the Ashland watershed study.

Current threats for this species include habitat loss to wildland fire, vegetation management that reduces key habitat features, and use of poisons (anticoagulant rodenticides) in illegal marijuana grows on public lands.

No surveys have been conducted for fishers in the Upper Briggs project area. Fisher sightings are documented in the Forest NRIS database within 5 miles north and south of the Upper Briggs Creek watershed. The abundance of mixed conifer-hardwood habitat in the watershed including black and white oak and the proximity of sightings suggest it is likely they could occur within the project area.

The Upper Briggs Creek watershed is used as the analysis area for Pacific fishers. Suitable habitat for fishers is present throughout the project area. Potential denning and resting habitat for this analysis was defined as predominantly conifer forest with $\geq 60\%$ canopy closure and a diameter of $\geq 20''$ dbh. The 2014 modified GNN data estimate approximately 10,700 acres of denning/resting habitat in the watershed. Dispersal and foraging habitat is sapling/pole conifer forest (9-19.9'' dbh) with $\geq 60\%$ canopy closure. The GNN data estimate 890 acres of dispersal/foraging habitat mapped within the project area, though practically the entire project area may provide foraging opportunities given the general nature of their food habits.

Lewis's woodpecker

Lewis' woodpeckers are migratory in southwestern Oregon, with sporadically large populations in the winter and scattered breeding pairs in the summer reported. Gilligan et al. (1994) reports that they are common breeders in summer in Josephine County but there are few recent breeding records (Janes et al. 2002). The population of Lewis' woodpeckers has fallen dramatically across Oregon as pine – oak woodlands are lost (Gilligan et al. 1994). A contributing factor in the decline has been the spread of the European Starling, which aggressively out-competes this species for available cavities. Habitat loss is due to a wide variety of concerns that include urbanization of valley floors, fire suppression and encroachment of conifer forests, timber harvest of pine components in the oak forests, etc.

This species is closely tied to the ponderosa pine/oak savannah habitats of eastern and southwest Oregon. Nests are often in the large Ponderosa Pine snags or mature oaks while the birds forage on insects and acorn meat. In winter they store acorn meat in crevices in trees and power poles. Because this woodpecker does not usually excavate its own cavity, they have a close tie to older snags within the forest that are likely to contain cavities and have crevices for food storage.

Potential habitat does exist for this species in areas where pine/oak restoration is proposed, though there are no known records of this species occurring in the project area. The nearest documented sightings in the Forest database are west between the coast and the Kalmiopsis wilderness, citizen sightings are also known in the Biscuit Fire burned area along the Illinois River.

White-headed woodpecker

White-headed woodpeckers have been confirmed breeding along the California border into Josephine County. There are no documented sightings in the Forest database of this species in the Upper Briggs Creek watershed, however, there are 8 observations in the database in the Sucker Creek watershed 20 miles south of project area. These woodpeckers breed in pine and mixed conifer forests with canopy openings and large-cone pine trees that produce seeds which are an important food source. They frequently nest open canopied forest patches next to closed canopy forest (Latif et al. 2015). This species is not migratory and can be found on the forest year round (Janes et al. 2002).

Thinned stands with large remnant trees provide suitable habitat, as well as old growth forests. Nest predation by small mammals has been found to be a common cause of nest failure for white-headed woodpeckers and they have been found to have better nesting success in pine stands with lower shrub cover (Mellen-McLean et al. 2013). In the Upper Briggs Creek watershed any dry, open forest stands with large trees and snags may serve as suitable foraging and breeding habitat for the species.

Purple martin

Purple martins are neotropical migrants, spending the non-breeding season in Brazil and migrating to North America to nest West of the Rockies and in the deserts they largely nest in abandoned woodpecker nest cavities located in the mid-story of the canopy. In the Pacific Northwest, purple martins are known to use gourds and clusters of single-unit boxes for nesting. (Gough et al 1998, PMCA 2006).

Purple martins are aerial feeders with a diverse diet that includes a wide range of flying insects such as dragonflies, damselflies, grasshoppers, moths, wasps, beetles, bees, flying ants, butterflies, and others. (Gough et al 1998, PMCA 2001, PMCA 2006, Sauer and Droege 1992). Purple martins utilizes a wide variety of terrestrial habitats including cropland, hedgerow, desert, grasslands, savanna, shrubland, chaparral, suburban, orchard, conifer woodland and hardwood woodlands. Generally, they inhabit open areas and prefer an open water source nearby (PMCA 2001).

Suitable habitat for this species may occur around the larger meadow areas such as Horse Creek and Sam Brown. There are no known sightings of this species in the project area. The nearest citizen sighting is along the Applegate River near Grants Pass, OR.

Threats to this species include competition with European starlings and house sparrows for nest sites, lack of tree cavities near open water for nesting habitat, and adverse (cool) weather that limits availability of flying insects.

Oregon shoulderband

This terrestrial snail is endemic to northern California and southwest Oregon. In Oregon, the range includes Jackson, Josephine, and Douglas Counties, with verified locations in Roseburg and Medford BLM Districts and the Umpqua National Forest.

The Oregon shoulderband is associated with rocks and woody debris in rocky areas within forest habitats, often adjacent to areas with substantial grass or seasonal herbaceous vegetation. Seasonal deep refugia include talus deposits and outcrops, which contain stable interstitial spaces large enough for snails to enter. These seasonal refugia also provide protection from fire and predation during inactive periods. Within rocky habitat, the species is also associated with subsurface water, herbaceous vegetation and deciduous leaf litter, generally within 30 m. (98 ft.) of stable talus deposits or rocky inclusions. Vegetation types where the species has been located include dry conifer and mixed conifer/hardwood forest communities as well as oak communities. Forest canopy cover moderates the extremes in environmental conditions and may provide additional moisture to the site in the form of condensation drip. Woody debris and deciduous leaf litter is often used as daily refugia during foraging and dispersal in the moist seasons. No strong riparian association has been identified.

Several sites in Roseburg BLM have been located in rock quarries and riparian areas adjacent to them. Additional sites were found on roadsides where large material from those quarries was used for the construction of culvert crossings, riprap for slope stabilizing, and other road-related uses. It is not known whether populations at these roadside locations are natural or were colonized by individuals transported there with quarry material. Road cuts which require removal of rock outcrops and talus, on the other hand, may result in loss of some natural sites, or transport of individuals from those sites to new remote locations which may not be suitable.

The project area contains suitable rocky, talus areas in stream drainages with hardwood and herbaceous components that also provide potential habitat. There are no records of this species occurring in the Upper Briggs project area. Mollusk surveys were conducted for the project in 2009, 2011, 2016 and 2017. Oregon shoulderband were not found.

Travelling sideband

The travelling sideband is an Oregon endemic terrestrial mollusk. With the exception of one site in Josephine County, *Monadenia fidelis celeuthia* is documented at low to moderate elevations from Jackson County, Oregon. It has been found from Medford east and northeast in the eastern Rogue River and Little Butte Creek drainages; this is a rough approximation of the physical areas in which *Monadenia fidelis celeuthia* is recognized to occur.

Monadenia fidelis celeuthia is found at low elevation in unaltered, somewhat dry and open forested terrain (Frest and Johannes 2000). It can be found in basal talus and rock outcrops with oak and maple overstory component; also along spring runs in rocks and moist vegetation and moss within mixed conifer-hardwood forest (western red cedar and maple); also very moist, silty alluvial bench adjacent to creeks in mixed conifer-hardwood forest (western red cedar, Douglas fir and big-leaf maple) (Duncan 2005). Habitat is present in the Upper Briggs project area especially in mature stands with madrone and live oak and exposed rocky soils with moss and down wood which is the habitat that this species was found in during mollusk surveys conducted for the project. In fact, this species is fairly common in the watershed. Ten individuals from the watershed were sent to Barry Roth in spring of 2017 to confirm identification and collect DNA samples.

Threats include logging, grazing, road construction and mining which can result in direct mortality or reduction of suitable habitat.

Franklin's bumble bee

Franklin's bumble bee is a typical primitively eusocial bumble bee. Females are generalist foragers for pollen, especially from lupine (*Lupinus*) and California poppy (*Eschscholzia*), and for nectar, especially from horsemint (*Agastache*) and mountain penny-royal (*Monardella*). Its nesting biology is unknown, but it probably nests in abandoned rodent burrows as is typical for other members of the subgenus *Bombus sensu stricto* (Hobbs 1968). Its flight season is from mid-May to the end of September (Thorp et al. 1983).

Franklin's bumble bee has the most limited geographic distribution of any bumble bee in North America and possibly the World (Williams 1998). It is known only from southern Oregon and northern California between the Coast and Sierra-Cascade Ranges. Stephen (1957) recorded it from the Umpqua and Rogue River Valleys of Oregon. Thorp et al. (1983) also recorded it from northern California and suggested its restriction to the Klamath Mountain region of southern Oregon and northern California. Its entire distribution, including recent range extensions (Thorp 2005), can be covered by an oval of about 190 miles north to south and 70 miles east to west between 122° to 124° west longitude and 40° 58' to 43° 30' north latitude.

It is known from Douglas, Jackson, and Josephine counties in Oregon and Siskiyou and Trinity counties in California. Elevations of localities where it has been found range from 540 feet (162 m) in the north to above 7,800 feet (2340 m) in the south of its historic range. The best habitat on the Forest where this species was last observed is high elevation meadows with a diverse abundance of flowers throughout the summer.

Common bumble bee species have been observed in the project area. Potential habitat for these bees in the project area is primarily in open shrub patches and roadsides, meadows, and riparian areas where there are flowering plants and shrubs, though diversity and availability of nectar and pollen throughout the summer is limited.

Western bumble bee

The western bumble bee was widespread and common throughout the western United States and western Canada before 1998 (Xerces Society 2009). The former range of U.S. states included: northern California, Oregon, Washington, Alaska, Idaho, Montana, western Nebraska, western North Dakota, western South Dakota, Wyoming, Utah, Colorado, northern Arizona, and New Mexico. Unfortunately, since 1998 populations of this bumble bee have declined drastically throughout parts of its former range. Populations of the western bumble bee in central California, Oregon, Washington and southern British Columbia have mostly disappeared. It is difficult to accurately assess the magnitude of these declines since most of this bee's historic range has not been sampled systematically.

The following from Evans et. al, 2008 describes survey efforts conducted in southern Oregon:

“Robbin Thorp has extensively searched several sites in southern Oregon and northern California where *B. occidentalis* used to be common. He has only found one *B. occidentalis* individual since 2002 (Thorp 2008). In yearly surveys of southern Oregon and northern California sites in which a total of 15,573 bumble bees were observed from 1998 to 2007, 102 *B. occidentalis* were observed in 1998, nine in 1999, one in 2000, one in 2001, one in 2002, and none in 2003, 2004, 2005, 2006, or 2007 (Thorp 2008, Figure 9). In 2008, a single *B. occidentalis* specimen was captured on Mt. Ashland in Oregon in a survey that included over 2,000 bees that were caught in blue vane traps (R. Thorp, personal communication, September 2008). An additional 2,000 bumble bees were examined foraging at flowers. No additional *B. occidentalis* were observed, indicating that although present, *B. occidentalis* is still extremely rare.”

In 2016, two individual *B. occidentalis* were confirmed by Thorp in a 2-day survey effort of approximately 30 volunteers (including the Project biologist) who examined over 1,000 bees foraging at flowers on Mt Ashland. Bumble bee surveys on the Wild Rivers Ranger District were conducted in habitat used by more common bumble bee species in 2015 and 2016. No western or Franklin's bumble bees were observed.

The western bumble bee also uses pre-existing holes such as abandoned rodent holes for nesting. These bees likely use a wide variety of flowering and pollen producing plants as most native bees.

There are no known occurrences of this bee in the Upper Briggs project area though more common bumble bees have been observed (*B. bifarius*, *B. vosnesenskii*). Potential habitat exists primarily in open shrub patches and roadsides, meadows, and riparian areas where there are flowering plants and shrubs, though diversity and availability of nectar and pollen throughout the summer is limited.

Coronis fritillary

This species inhabits mountain slopes, foothills, dry gulches, lower elevation canyons, prairie valleys, meadows, chaparral, sage steppe, and forest glades, margins, and openings (Opler *et al.* 2011, Evergreen Aurelians 1996). Most known records are from lower slopes at elevations less than 2000 ft. (610 m), although elevations of 4400 ft. (1341 m) and 5100 ft. (1554 m) have also been recorded, one near Onion Mountain. Recent surveys in Josephine County found this species to be generally associated with serpentine influenced, rocky hill-slopes dominated by Jeffery pine (*Pinus jeffreyi*) and other serpentine associated forbes and grasses presence of *Viola hallii* (Hall's violet) which is a primary larval food for this species (Reilly & Black 2011). Adults have been observed using flowers of mint, thistles and other composites.

Aside from the observation at Onion Mountain, most records of this species nearest the project are along the Illinois River.

Johnson's hairstreak

This small brown butterfly occurs in isolated pockets in the western mountains of California up into British Columbia. This butterfly is closely associated with late-successional and old-growth conifer forests where it spends most of its time in the overstory canopy. They do nectar on some lower growing plants, like Oregon grape and males will use damp earth sites, such as seeps and springs for moisture and minerals. Caterpillars have been found to feed on dwarf mistletoe species (*Arceuthobium* spp) that grow on western hemlock, white fir, ponderosa pine, Jeffrey pine and Brewer's spruce (Davis et al, 2011). Ponderosa and Jeffrey pine would be the most common of these conifers in the project area that may provide mistletoe for this species. Nectar plants include vine maple, manzanita, Oregon grape, pussy paws, whitethorn ceanothus and several other shrubs and herbaceous species that have whitish flowers with yellow and pinkish hues (Davis et al, 2011).

Wildfire has been shown to be an important factor limiting the distribution and abundance of dwarf mistletoe (Hawksworth and Wiens 1996 in Davis et al, 2011). The recent Oak Flat and Onion Mountain fires may have resulted in loss of mistletoe habitat within approximately 9 percent of the watershed. Timber harvest of mature forests may also be a threat to this species. Other threats include spraying BT for tussock moth and other pests.

On the Rogue River-Siskiyou, they have been observed in the southern portion of the Wild Rivers Ranger District with more occurrence of white fir, and north and west of the Kalmiopsis wilderness where there is more western hemlock. Additional observations are in the Cascades on the west side of the Forest. The nearest observation to the Project Area is 6 miles west in Silver Creek.

Pallid bat

Pallid bats are known to occur throughout SW Oregon and NW California. Suitable roost habitat types include buildings, bridges, rock outcrops, and large decadent snags with loose bark, particularly associated with xeric sties. They feed primarily on beetles, moths, and other insects and often feed from the ground. (from *Land Mammals of Oregon* (Verts and Carraway 1998). Threats include damage or destruction of roost sites and hibernacula. These bats are also sensitive to disturbance around roost sites. The nearest pallid bat sighting documented in the Forest NRIS data is approximately 8 miles north of the project area. Habitat for this species occurs throughout the Upper Briggs watershed where there are large decadent snags.

Fringed myotis

Fringed myotis also occur throughout SW Oregon and NW California. It is most common in drier woodlands (oak, pinyon-juniper, ponderosa pine) but is found in a wide variety of habitats including mesic coniferous forest. They commonly roost in crevices in buildings, mines, rocks, cliffs and bridges and are also known to roost in large decadent trees and snags. Beetles and moths are their primary diet. Forest NRIS data documents Fringed myotis at the northern edge of Horse Creek Meadow. Habitat for this species occurs throughout the Upper Briggs watershed where there are large decadent snags.

Pacific Marten (coastal population)

Much of the information below is summarized from the U.S. Fish and Wildlife Service's finding on the marten within coastal Oregon and northern California (also known as the Humboldt marten) (April 7, 2015: 80 FR 18742-18772). That document contains a detailed description of the species, its habitats and potential threats to the species. It is available on the internet at:

<http://www.regulations.gov> at Docket Number FWS-R8-ES-2011-0105.

The American marten was historically recognized as a single species occurring across a broad range of North America. In 2012, the Pacific marten was split from the American marten based on genetic and morphological differences (Dawson and Cook 2012). The Pacific marten occurs

largely in montane and coastal coniferous forest west of the Rocky mountain crest. There are two subspecies of Pacific marten recognized in Oregon. One in the coast and cascades range, and the other in the Blue Mountains of northeast Oregon. The Upper Briggs project area is on the eastern edge of the historic range of the coastal Oregon population of the Pacific Marten.

Marten tend to select for mature and old conifer forest with high stand complexity including dense shrub layers and high amounts of large down wood. These habitat characteristics provide foraging and cover advantages in their ability to be concealed from prey and predators. (USFWS 2015). They are preyed upon by larger mammals such as fox, bobcat, coyote and fisher. Martens consume a variety of prey including chipmunks, small birds, reptiles and even berries. Resting structures include large-diameter live trees, snags and down logs. When these structures contain cavities, denning habitat is also available. (80 FR 18747) Within the coastal southern Oregon population area, 44 percent of the federal and state lands are in moderate or high suitability marten habitat. (80 FR 18769)

Habitat modification due to vegetation management was not found to be primary stressors on coastal marten habitat on federal lands compared to private lands. Wildfire and climate change were considered to be medium level stressors on habitat in southern coastal Oregon. Of the stressors evaluated for impacts to marten populations, disease, predation, and collision with vehicles were low and trapping and exposure to toxicants were low to medium level stressors in southern coastal Oregon (USFWS 2015).

Currently there are no data with which to estimate the abundance or a population trend for the coastal population of marten; however, strategic surveys were begun in 2014 and continued in 2015 and 2016 for a large, long-term study conducted by the Pacific Northwest Research Station and Oregon State University to determine the extent and range of the marten population in coastal Oregon. It includes DNA analysis from hair samples to expand knowledge of the coastal population's relationship with the northern California subspecies (*Martes caurina humboldtensis*). These surveys included the Gold Beach and Powers Ranger Districts west of the Upper Briggs Project area. The Forest NRIS database has several records of marten observations north and west of the project area. The nearest are one observation 2 miles south of the project area and one 4 miles north of the project area.

Survey and Manage (NWFP) Species

See Appendix B for a full discussion of current policy for survey and manage species, including the history of litigation through 2014. Table 19 lists all NWFP species and range. Information is also available at <http://www.blm.gov/or/plans/surveyandmanage/>.

The Upper Briggs Restoration project is within the range of the northern spotted owl and Oregon red tree vole. It is consistent with the survey and management standards and guidelines in the January 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (USDA Forest Service and USDI Bureau of Land Management 2001) and is based on the district court's remedy order issued on February 18, 2014 (*Conservation Northwest v. Bonnie*, W.WA No. C08-1067-JCC). This remedy order followed after the 9th Circuit Court of Appeals rejected the 2011 Consent Decree executed in resolution of the district court action (*Conservation Northwest, et al v. Harris Sherman, et al and D.R. Johnson Company*, 715 F.3d. 1181, C.A. 9 (Wash), April 25, 2013).

The Upper Briggs project utilizes the December 2003 species list. This list incorporates species changes and removals made as a result of the 2001, 2002, and 2003 Annual Species Reviews with the exception of the red tree vole, *Arborimus longicaudus*. For the red tree vole, the Ninth Circuit Court of Appeals in *KSWC et al. v. Boody et al.*, 468 F3d 549 (9th Cir. 2006) vacated the category change and removal of the red tree vole in a portion of its range, and

returned the red tree vole to its status as existed in the January 2001 Record of Decision and Standards and Guidelines, which makes the species category C (see Table 19) throughout its range.

Pechman Exemption – Several proposed treatment units are consistent with a category of projects exempt from survey and manage standards and guidelines as stipulated by Judge Pechman (October 11, 2006). That category is: *thinning projects in stands younger than 80 years old*. Therefore, pre-disturbance surveys and application of known site-management recommendations is not required for these units which are included in both action alternatives.

Units that do not meet the Pechman exemption and include suitable habitat for Survey and Manage species that may occur in the project area were surveyed to protocol. Details of the project surveys and/or site management for these species are described below.

Great Gray Owl

The Survey Protocol for the Great Gray Owl version 3.0 January 12, 2004 was used for the Upper Briggs project. This protocol includes detailed natural history and habitat descriptions and is available at

<https://www.blm.gov/or/plans/surveyandmanage/protocols/> Key information is summarized below.

The great gray owl occupies boreal, montane and subalpine forests of the western United States. Prey items are primarily small rodents including pocket gophers and voles for which they hunt from perches near large open grassy and woodland areas. They do not build nests and use old hawk and raven stick nests, depressions on broken top snags or stumps, and platforms formed by dwarf mistletoe. Nest sites tend to be located in mature or remnant old-growth forests near large meadow opening with sufficient prey.

The great gray owl is currently a category A species on the December 2003 survey and manage list. Category A species require pre-disturbance surveys management of known sites.

Horse Creek meadow in the project area was determined to be potential suitable habitat for great gray owls and surveys were conducted in 2014 and 2015. No detections were observed. In addition, potential nesting habitat around the meadow has been walked numerous times during the day with no sign or observations of these owls.

Oregon Red Tree Vole

The survey protocol for red tree voles includes detailed natural history and habitat descriptions. It's available at <http://www.blm.gov/or/plans/surveyandmanage/files/sp-RedTreeVole-v3-0-2012-11.pdf>. Key information is summarized below.

The Oregon red tree vole is highly arboreal, nocturnal and feeds primarily on Douglas-fir needles. They are usually associated with old growth forests but also occur in younger stands. Nests consist of twigs and discarded resin ducts in the canopy of larger trees.

The red tree vole is currently a category C species on the December 2003 survey and manage list. Category C species are uncommon and pre-disturbance surveys are practical. Management of high-priority sites is required. All sites are assumed to be high-priority unless determined to be otherwise through concurrence with the interagency programs in place. For the Upper Briggs Restoration Project, a high priority site conservation plan will be completed per interagency direction for the Briggs Creek 5th field watershed prior to the project decision. Management recommendations for high priority sites were provided in April of 2016 (Huff, 2016).

The Upper Briggs project area contains suitable habitat for red tree voles. Protocol surveys for red tree vole nests within the project area occurred in 2009, 2010 and 2014 within some of the proposed treatment units. Surveys expire within 5 years for active sites and within 10 years for inactive sites.

In addition, nests discovered by the Northwest Ecosystem Survey Team within the project area in 2012 were considered during project development. None of the surveys covered all of the units proposed under Alternative 2 that would require surveys. Alternative 3 would not require surveys because those stands are less than 80 years in age, though some of those stands were previously surveyed and red tree vole nests were found. The decision to develop a high priority site conservation plan for the Briggs Creek watershed was intended to provide an efficient, proactive approach to managing habitat for red tree voles while also allowing for spatially strategic vegetation management to meet other resource objectives in the watershed.

Additional known nests are documented in the Forest NRIS database within the Briggs Creek 5th field watershed. Because the RTV High Priority Site Conservation Plan is at the 5th field watershed scale, results from all surveys in the Briggs Creek 5th field watershed (196 RTV nests) were used to identify high priority sites for long-term red tree vole habitat management described in the Briggs Creek Red Tree Vole High Priority Site Conservation Plan consistent with the High Priority Site Management Recommendations for the Red Tree Vole (*Arbborimus longicaudus*) Version 1.0 (Huff 2016). Any activities that occur within these sites would be consistent with red tree vole conservation. These high priority sites are expected to ensure persistence of the species in conjunction with reserved lands within the Briggs Creek 5th field watershed. Red tree vole nests outside of high priority sites are considered non-high priority for long-term management. Mitigation measures would prevent felling and minimize damage or isolation of known nest trees. Further details about the RTV Conservation Plan are provided in the Briggs Creek RTV High Priority Site Conservation Plan is available in the Project Record.

Chase Sideband

The survey protocol used for the Chase Sideband was the Survey Protocol for Survey and Manage Terrestrial Mollusk Species from the Northwest Forest Plan version 3.0 2003. This protocol includes detailed natural history and habitat descriptions and is available at <https://www.blm.gov/or/plans/surveyandmanage/protocols/> and a species fact sheet available in the project record. Key information is summarized below.

The Chase sideband is currently a category B species on the December 2003 survey and manage list. Category B mollusk species require equivalent-effort surveys and protection of known sites.

This species is endemic to northern California and southwest Oregon. In California, this species has been reported mainly from the Klamath Basin in northern Siskiyou County, from the vicinity of Happy Camp east to the Shasta and Little Shasta River Drainages, in the Goosenest Ranger District of the Klamath National Forest, with a few locations reported as far south and west as Trinity County, on the eastern slopes of the Trinity Mountains in the Weaverville Ranger District of Shasta-Trinity National Forest. In Oregon, sites occur in southern and eastern Jackson and Douglas Counties, in the Klamath-Siskiyou Mountains and the west slopes of the Cascades, north to the Umpqua River basin. One site has been reported from the Klamath River Basin in southwestern Klamath County, Oregon. This species has not been documented in Josephine County.

Chace sidebands are associated with forested and open talus or rocky areas. Vegetation types include dry conifer and mixed conifer/hardwood forest communities as well as oak communities. Mollusks which inhabit rocky habitats also utilize the surrounding forest areas for foraging and dispersal during moist, cool conditions. Seasonal deep refugia include talus deposits and outcrops, which contain stable interstitial spaces large enough for snails to enter. These seasonal refugia also provide protection from fire and predation during inactive periods. Within rocky habitat, the species is also associated with subsurface water, herbaceous vegetation and deciduous leaf litter. In some forested sites, especially in the OR Cascades Province, the species has been found associated with down wood where few rock substrates occur. Areas with frequent fire return intervals where rock crevice refugia are available may have historically favored this species over other, larger forms of *Monadenia*.

Protocol surveys were conducted in units that do not meet the Pechman exemption and contain suitable habitat in fall 2016 and spring 2017. No *Monadenia chaceana* were found.

Management Indicator Species (MIS)

A forest-wide baseline and updated species accounts of management indicator species for the Siskiyou National Forest was produced in 2012 (USDA Forest Service 2012) and is available on the project website. It includes a full description of each species plus MIS law, regulation and policy. Relevant information is summarized in this document.

Management indicator species represent other wildlife species which utilize a similar habitat type. As such, MIS act as a barometer for the health of various habitats and are monitored to quantify habitat changes predicted in the Siskiyou LRMP (1989 pages IV-10 and 11, FEIS page III-102).

The current MIS species for Siskiyou National Forest and why they were selected are shown below in Table 9. Bald eagles are not documented in the Forest NRIS database within the Upper Briggs Creek watershed, and one osprey observation is recorded near Horse Creek meadow. Most observations of these birds are in watersheds east and north of Upper Briggs that include the Rogue River. As mentioned previously, American (Pacific) marten are not documented in the watershed, but suitable habitat is present. All the other MIS species in Table 7 are documented within the Upper Briggs Creek watershed.

Table 7. Management indicator species for the Siskiyou National Forest – wildlife (USDA Forest Service 2012).

Species	Habitat Represented	Why Selected
Bald eagle	Habitat corridors along major rivers	Endangered/Threatened
Osprey	Habitat corridors along large creeks and rivers	Represents Specific Habitat
Spotted owl	Old-growth forest	Endangered/Threatened
Pileated woodpecker, American marten	Mature forest	Represents Specific Habitat
Woodpeckers	Snags (standing dead trees)	Represents Specific Habitat
Black-tailed deer, Roosevelt elk	Early successional forest stages	Species Commonly Hunted

The amount of habitat on the Siskiyou National Forest for the above species based on the information in USDA Forest Service 2012 is summarized below in Table 8.

Table 8. Amount of habitat in 2011 for MIS species for the Siskiyou National Forest.

Species	Habitat in 2011 (acres)	Habitat as a Percent of Siskiyou NF	Percent of Habitat Protected (reserve LUAs)
Bald eagle	39,536	4%	98%
Osprey	39,536	4%	98%
Spotted owl	368,428	34%	86%
American marten	368,428	34%	86%
Pileated woodpecker	368,428	34%	86%
Woodpeckers (unmanaged)	864,290	83%	N/A
Deer and elk (thermal)	368,428	34%	86%
Deer and elk (forage)	486,985	45%	N/A

Habitat trends between 1989 and 2011 for MIS species for the Siskiyou National Forest are

shown in Table 11. Most of the decrease in mature forest and increase in young and early seral habitat from 1994 to 2011 was due to the 2002 Biscuit Fire (~468,000 acres on SNF).

Table 9. Habitat trends for MIS on Siskiyou National Forest 1989 to present (USDA-FS2012)

Size & Canopy Closure	Successional Stage	Age (Years)	1989 Acres (%)	1994 Acres (%)	2011 Acres (%)
Less than 10" DBH or less than 40% canopy closure	Cliffs, rock, balds, talus		11,000 (1%)	11,000 (1%)	11,000 (1%)
	Serpentine (scattered trees)	0-200+	150,000 (14%)	150,000 (14%)	150,000 (14%)
	Grass/forb	0-3	255,000 (23%)	264,276 (24%)	380,320 (35%)
	Low shrub	4-10			
	Tall shrub	11-20			
	Pole/sapling	21-40			
	Hardwoods – small	< 40			
10" – 20" DBH & 40%+ canopy closure	Hardwoods - >10" & 40% canopy	41-100	233,000 (21%)	229,165 (21%)	181,283 (17%)
	Young including hardwoods meeting DBH & canopy closure	41-100			
21" – 31" DBH & 40%+ canopy closure	Mature	101-200	443,000 (41%)	436,587 (40%)	368,427 (34%)
32" + DBH & 40%+ canopy closure	Old growth	200+			
Totals			1,092,000	1,091,028	1,091,030

Other Species of Concern

Migratory and Focal Bird Species

Executive Order 13186 (2001) and a 2008 memorandum of understanding with the U.S. Fish and Wildlife Service (extension signed August 1, 2016) direct the Forest Service to avoid or minimize adverse impacts on high priority migratory birds and their habitats during agency actions (for full policy description see appendix B).

The U.S. Fish and Wildlife Service published a list of birds of conservation concern (BCC) in 2008 for the northern Pacific forest bird conservation region 5 (BCR5). The full list of BCC species for BCR 5 is in appendix E, Table 18.

Focal bird species, which represent important habitat components in a functioning coniferous forest ecosystem, are used in our analysis on migratory birds. The concept is described in detail in *Habitat Conservation for Landbirds in the Coniferous Forests of Western Oregon and Washington* (Altman and Alexander 2012). In addition, Partners in Flight published a revised Landbird Conservation Plan for Canada and the Continental United States in 2016. This plan identifies additional species for BCR 5 of high conservation concern and common species in steep decline for which proactive management of habitat and reduction of threats are expected to reverse population declines. The full list of these species that could occur in the Upper Briggs Creek watershed, and their habitat attributes, is in appendix E, Table 20.

Habitat – Habitat within the Upper Briggs project area is primarily diverse mixed conifer-hardwood forest that varies by aspect and elevation. Perennial streams such as Briggs Creek, Meyers Creek, Sucker Creek and Horse Creek provide areas with deciduous vegetation and conifer edges. The only open grassy areas are Horse Creek meadow, Sam Brown meadow and smaller remnants of meadows scattered along the valley floor. Open brush occurs naturally on certain harsh sites, and in burned areas. Plantations provide shrub and young conifer habitat. Snags and

legacy trees throughout the project area provide nest sites and foraging for some species.

Bird species present – The species of concern and focal species from the three combined lists associated with habitat that occurs within the Upper Briggs project are listed in Table 10, including their habitat attributes.

Table 10. Migratory bird species of concern and associated habitat attributes within the Upper Briggs project area.

Forest Condition	Habitat Attribute	Focal Species
Old-growth/Mature	Large snags	Pileated Woodpecker
Old-growth/Mature	Large trees	Brown Creeper
Old-Growth/Mature	Deciduous canopy trees	Pacific-slope Flycatcher
Old Growth-Mature	Mid-story tree layers	Varied Thrush
Mature	Conifer-deciduous canopy	Northern goshawk
Mature	Large patches of moist conifer forest	Chestnut-backed chickadee
Mature/Young	Closed canopy	Hermit/Townsend's Warbler
Mature/Young	Open mid-story	Hammond's Flycatcher
Mature/Young	Deciduous understory	Wilson's Warbler
Mature/Young	Forest floor complexity	Winter Wren
Young/Pole	Deciduous canopy trees	Black-throated Gray Warbler
Young/Shrub	Open shrub dominated	Mountain quail
Young/Shrub	Dense brush/young plantations	Wrentit
Sapling/Seedling	Residual canopy tree	Olive-sided Flycatcher
Sapling/Seedling	Snags	Northern Flicker
Sapling/Seedling	Deciduous vegetation	Orange-crowned Warbler
Unique	Nectar-producing plants	Rufous Hummingbird
Unique	Mineral springs/seeps	Band-tailed Pigeon
Unique	Montane wet meadows	Lincoln's Sparrow
Unique	Large hollow snags	Vaux's Swift
Unique	Landscape mosaic forest	Blue (Sooty) Grouse
Klamath Mts. Mixed Forest	Pine-oak canopy/subcanopy trees	Purple Finch
Klamath Mts. Mixed Forest	Dense shrub understory	Nashville Warbler
Klamath Mts. Mixed Forest	Shrub-herbaceous interspersions	Hermit Thrush
Klamath Mts. Mixed Forest	Forest canopy edges	Western Tanager
Klamath Mts. Mixed Forest	Montane brushfields	Fox Sparrow
Klamath Mts. Mixed Forest	Post-fire	Lazuli Bunting
Conifer Hardwood Forest	Mixed conifer and hardwoods	Pine siskin
Conifer Forest Edge	Forest edge/shrub openings	Evening grosbeak
Forest Edge/Riparian	Dense, moist vegetation	Allen's hummingbird
Edge/Riparian	Dense riparian shrubs (willow)	Willow Flycatcher

Surveys – No systematic, general bird surveys have occurred in the analysis area in the recent past. Christmas bird counts and breeding bird surveys occur regionally within the State of Oregon and information is aggregated and reported on the Partners in Flight (PIF) website at <http://www.partnersinflight.org/>. PIF maintains a species assessment database which contains detailed information of species at risk, including population trends. Also available on the website is the 2014 *State of the Birds* report which reports birds vulnerable to extinction and their population trends. Furthermore, citizen observations of birds are documented on www.ebird.org established in 2002 by the Cornell Lab of Ornithology and National Audubon Society. This database is gaining use by scientists for studying distributions of bird species.

Pollinators

In June of 2014 a Presidential Memorandum was issued to create a Federal strategy to promote the health of honey bees and other pollinators. Federal agencies were tasked with enhancing

pollinator habitat on their managed lands, consistent with their mission and public safety. Best management practices for enhancing pollinator habitats have been developed (Xerces Society for Invertebrate Conservation 2015) and would be implemented within the Upper Briggs project area, where practical.

Habitat – Habitat for pollinators is varied and somewhat limited within the Upper Briggs project area. The best pollinator habitat consists of open landscapes with good sun exposure and many types of native, herbaceous plants (Xerces Society for Invertebrate Conservation 2015). One key is having a variety of plants that produce pollen and nectar from spring through early fall. The Upper Briggs project area includes manzanita, ceanothus, pacific madrone and Oregon grape which all provide nectar and some pollen. Native forbs are available in smaller amounts, mostly along roadsides and riparian areas. The meadows tend to have more grasses than forbs. Depending on the pollinator species present, other important components are dead wood and open soil for nest sites and open water.

Pollinator species - Appendix C lists all regionally sensitive species considered during our analysis, including several species of butterflies and bumble bees. None of the regionally sensitive pollinator species are documented within the Upper Briggs project area, but certain butterflies are suspected to occur. Common bumble bee species have been observed in project area, but neither of the two sensitive species.

Surveys – Horse creek meadow was surveyed for mardon skipper in July, 2017. Eleven species of butterflies and one common bumble bee species (*B. vosnesenskii*) were observed. No protocol surveys for any specific pollinators have occurred within the project area.

5.3. Environmental Consequences – Terrestrial Wildlife

Mechanisms for Effects

Following are the potential effects to wildlife and their habitat, both negative and positive, that could result from proposed treatment activities. The extent and intensity of these effects will be evaluated for each species identified previously as known or likely to occur in the project area. The effects of these activities to each species are evaluated relative to the type of proposed treatment (DELSH, riparian reserve, Ridgeline FMZ, etc.) because each treatment has a different intensity of activity.

- **Thinning and yarding activities**
 - Decrease in or removal of canopy closure and understory; modification of habitat
 - Incidental destruction of existing down wood or snags; or felling of existing snags and danger trees.
 - Direct mortality from equipment and tree felling.
 - Noise disturbance
 - + Maintenance of shade-intolerant species and meadows
 - + Acceleration in development of large trees and complex stand structure.
 - + Increased tree growth for future large dead wood.
- **Fuels treatments and burning**
 - Smoke disturbance during breeding season.
 - Reduction of understory habitat elements (short and long-term)
 - Direct mortality from burning (e.g. mollusks, insect larvae)
 - + Long-term maintenance of open canopy, fire-adapted and shade-intolerant species
 - + Increase in fire resiliency of trees in burned areas
 - + Increased opportunities for wildland fire containment
- **Temporary road and landing construction or reconstruction**
 - Localized, short-term habitat removal/modification
- **Road closure and decommissioning**
 - + Reduction of human disturbance
 - + Reduction of habitat fragmentation
- **Hauling of removed material**
 - Noise disturbance

Background for Cumulative Effects

Approximately 98 percent of Upper Briggs Creek watershed is National Forest, managed by the Wild Rivers Ranger District. Approximately 20 percent of the watershed is composed of managed stands with some level of past timber harvest. Activities occurring or reasonably certain to occur on National Forest lands within the Upper Briggs Creek watershed separate from the proposed project include plantation thinning, slash treatment, and underburning; fuel wood cutting; road maintenance; and invasive weed treatments. To avoid or minimize adverse effects on spotted owls, all activities employ mandatory protection measures similar to Upper Briggs (appendix A), unless consultation with the U.S. Fish and Wildlife Service (USFWS) allows otherwise.

Furthermore, burn severity mapping for the 2010 Oak Flat fire and 2014 Onion Mountain fires estimates 2 percent of the watershed with high burn severity and 7 percent of the watershed with medium burn severity. The effects of these recent fires are included in the habitat data used for this analysis.

The small amount of private land in the watershed is generally managed for timber production, mining and residential use. Industrial lands are managed in accordance with the Oregon Forest Practices Act. The OFPA requires modification of activities in some cases for wildlife species identified as sensitive, threatened, or endangered

(<http://www.oregon.gov/ODF/Working/Pages/FPA.aspx>).

Recreational use occurs year-round as long as snow doesn't impede access. Trails and roads receive motorized and non-motorized use. Developed and dispersed camping and game and mushroom hunting occur seasonally. Larger group events that utilize the campgrounds and trails occur annually. The Upper Briggs area is also popular for small type mining, panning, sluicing, and suction dredging, since this area is not closed to suction dredging per the state of Oregon.

Effects to Federally Listed Species – Northern Spotted Owl

The northern spotted owl is the only federally listed species in the project area. The project biological assessment used for consultation with the US Fish and Wildlife Service provides a detailed evaluation of effects to this species for alternative 2. This evaluation provides a comparison of effects to this species for each alternative. To summarize, adverse effects are expected as a result of alternatives 2 and 3 where small patches of existing NRF habitat would be downgraded on strategic ridgelines and on south-facing slopes where pine-oak restoration would occur. These are areas with low relative habitat suitability where owls are not likely to nest, however proposed activities may change the roosting and foraging opportunities in these areas. These effects are expected to be outweighed by the long term benefits of increased NRF habitat, maintaining prey habitat diversity and increased resilience of the landscape to fire. The extent of these effects differs between alternative 2 and 3 due to the difference in total acres treated as detailed below. The "action area" analyzed for effects to NSO is a 1.3 mile buffer (provincial home range size, 3,400 ac) of the treatment units which includes evaluation of the entire home range for owl sites that occur within this buffer area. All known NSO sites are buffered 1.3 mi for the home range, 0.5 mile for the core area (500 ac) and 300 m for the nest patch (70 ac) to evaluate effects to individual sites.

No Action Alternative

Taking no action would have no direct effects on northern spotted owls or habitat. The stands would persist on their current trajectory toward attaining old-growth characteristics, but it would likely take an additional 50 to 100 years than stands with thinning treatment. For this project, a forest vegetation simulation model (FVS) was used to run treatment vs. non-treatment scenarios based on stand data collected within proposed units. The modeled scenarios indicate that the average size of trees in proposed treatment units would be greater than no-treatment within 40 years (see Silviculture Report for more details and appendix F for a comparison of FVS model for no action and action alternatives).

Units identified for DELSH or riparian restoration treatments currently lack complexity elements such as canopy layering, species diversity and large down wood. With no action, slow development of complex, old-forest conditions would continue with tree suppression and death due to competition for limited resources (light and water). These dead trees would increase small diameter dead wood, however they do not have the mass of larger diameter wood that provide hollows (dens) and adequate cover for carnivores, small mammals and herpetofauna (Bull 2002). Large diameter down wood also provides moisture refugia for production of hypogeous fungi (eg. truffles), a food source for many small mammals, especially flying squirrels (Maser and Maser 1988, Waters et al, 2000). Recruitment of large snags would continue through insect and disease infestations. More existing large snags would remain intact for longer in the absence of harvest activities and fire treatments which would contribute to large down wood in the long-term.

Stands with legacy pine and oak (black oak, live oak, white oak) and certain endemic botanical species which require disturbance and sunlight would continue to be encroached with Douglas-fir. Without disturbance events, opportunities for establishing species or structural diversity through natural processes would remain low. Natural disturbance events (wind, fire, disease) would eventually create openings in stands, allowing shade-tolerant species to become established in the understory, increasing stand diversity. Wildland fire would likely occur under

high severity conditions. Based on characteristics of recent wildland fires in the area, loss of habitat would be expected from fire severity and suppression activities, particularly on ridgelines. Habitat connectivity would be subject to patterns and conditions of natural disturbance events. The use of prescribed fire would be limited to treatments in plantations and meadow burning covered under other NEPA.

Large-scale disease or insect infestations are also possible in the watershed especially on sites with shallow soils and high tree density (such as ridgelines) where recent drought has weakened trees. This would reduce canopy cover in existing NRF and dispersal habitat and possibly reduce the amount of these habitats.

Proposed Action Alternative 2

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ

Treatments to develop and enhance late successional habitat (DELSH) and riparian restoration using variable density thinning with gaps (openings) are designed to maintain functionality of existing NRF and dispersal habitat by retaining minimum canopy cover (or more), basal area, existing down wood, canopy layers and other structure elements where they exist and currently contribute to the function of these habitats. These units were chosen for treatment because they lack many of these characteristics and would benefit from thinning to accelerate development of complex late successional forest structure and decadence. This is the primary treatment proposed in 4 percent of the Upper Briggs Creek watershed (Table 2) and 3 percent of the NSO action area. Variable density thinning treatments would increase the growth of larger diameter trees and improve conditions for development of large branches and deep crowns by reducing competition for sunlight and water. Less dominant species such as pine and hardwoods would be favored and would also benefit from increased sunlight. Reduction of tree density would also provide light to stimulate growth of understory shrubs and tree seedlings, thereby accelerating the development of multiple layers and large trees by 30 to 50 years. This understory diversity provides microsite conditions (moisture, cover, food) important for prey species of the spotted owl and other species associated with forest floor complexity. Landings, temporary roads and skyline openings would be included with the 20 percent of openings allowed within any treatment unit per consultation with the USFWS of effects to the northern spotted owl. These would be located before implementation of additional gap treatments to ensure this limit is not exceeded.

The DELSH and riparian restoration treatments would accelerate the amount of contiguous old-growth forest available to owls and lessen edge effects (desiccation, predation risk, etc). Increased tree spacing and development of thicker bark would reduce risk of a stand-replacing fire. Roadside FMZ treatments would also maintain existing NRF and dispersal habitat functionality, improve growth and fire resilience of large trees, and increase late successional habitat connectivity over the long term.

Short-term negative impacts from thinning may affect arboreal prey species for NSO such as flying squirrels and red tree voles. While these species commonly nest in larger trees that will be retained, they are known to use smaller diameter fir for nests and travel across the canopy, a portion of which would be removed by proposed treatments. All known red tree vole nest trees from previous surveys would be retained, and high priority sites for red tree voles in the watershed are excluded from this project and will remain undisturbed (See Project RTV High Priority Site Management Strategy). Thinning may reduce canopy connectivity in portions of units where the objective is to enhance light for pine, hardwoods and understory stimulation, however long-term development of the understory will increase canopy layering for hiding cover and travel.

Collectively, DELSH, riparian restoration and roadside FMZ treatments are considered as “treat and maintain” (hereafter, T&M) effects to spotted owl NRF and dispersal habitat with long-term benefits and comprise approximately 8 percent of proposed treatment acres. Table 11 displays the

amount of T&M treatments in NSO core areas and home ranges under alternative 2 which are expected to increase the amount of high quality NRF for five of the seven sites in the long-term. Dispersal T&M acres with these treatments are expected to increase NRF habitat in the long-term. Three sites (55, Sam Brown and Secret Creek) would have a 5 to 10 percent long-term increase in NRF that would put their home ranges above the minimum threshold (40 percent). These sites would also have a 9 to 16 percent increase in core area NRF that would put their core areas above threshold (50 percent). Two sites, (60 and 228) would have 6 to 10 percent long-term increases in NRF in their home range and core area that would put them at 35 to 37 percent NRF at each scale. Two other sites, (50 and 59) have little overlap with project treatments and neither would have a measurable increase in NRF within their home range or core area.

Direct and indirect effects – Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

Pine-oak and rare plant restoration treatments comprise less than 4 percent of the watershed and 2 percent of the NSO action area. Strategic Ridgeline FMZs comprise 4 percent of the watershed and 2 percent of the NSO action area. Reduction of canopy closure to 40 percent in these treatments would increase spacing and sunlight for the shade-intolerant species of pine and oak that occur in these areas. In addition, vegetation simulation modeling of proposed ridgeline FMZ units indicates that 40 percent canopy cover would effectively reduce the risk of crown fire under conditions that would be within prescription for underburning. This is important where ridges would be used as holding lines for large area underburns and also provide opportunities for fire containment with minimal site preparation during wildland fire suppression activities. These treatments would result in a downgrade of 550 acres of existing NRF which is approximately 6 percent of the NRF in the Upper Briggs Creek watershed. However, these locations have low relative habitat suitability (RHS) for nesting habitat where owls are less likely to nest due to exposure to wind, temperature and precipitation extremes and likely less prey during the breeding season compared to more moderate climate conditions on northerly slopes and in drainages where NRF stands have more structural complexity. Therefore, this low RHS NRF is considered to have more value as roosting, foraging and dispersal habitat than for nesting. Post-treatment, these downgraded acres would function as dispersal habitat. These treatments would retain all trees greater than 120 years in age and primary shade zones for riparian areas. This would result in a variable canopy cover with some areas greater than 40 percent. Table 11 summarizes the degree of change in NRF for the home ranges and core areas affected by these treatments as well as the expected long-term increase in NRF habitat from the treatments that will develop NRF habitat.

Areas of dispersal habitat with 40 percent canopy cover in these treatments would remain and continue to function as dispersal habitat post-treatment. In addition, approximately 65 acres of dispersal habitat would be removed for treatment of meadow encroachment. These dispersal acres are spread out along the edges of meadows so the treatment would result in a shift of the edge habitat with a localized reduction of canopy cover which is less than 0.1 percent of the available dispersal habitat in the watershed.

Reduced canopy cover can decrease some important owl prey species, such as northern flying squirrels and red tree voles, which appear to be especially susceptible to the loss of the mid-story canopy layer (Wilson and Forsman 2013). Recent research indicates thinning reduces flying squirrel and red tree vole abundance, however small forest-floor mammal species such as mice, voles and shrews have shown early and positive responses to thinning and burning which are also prey species of spotted owls in the mixed conifer and mixed evergreen forests of the Klamath Province (Wilson and Forsman 2013, Ward et al. 1998).

Conifer-hardwood edge habitats are considered an important component of foraging habitat in the Klamath Province and are a primary constituent element of the Klamath Province critical habitat (USDI Fish and Wildlife Service 2012, Sakai and Noon 1993, 1997; Ward et al. 1998). Proposed

treatments to restore pine-oak woodlands would maintain mast production (acorns) used by prey species (e.g. woodrats) associated with this edge habitat.

Direct mortality of prey species could inadvertently occur during thinning treatments. Known red tree vole nest trees from previous surveys would be retained. Canopy connectivity would also be retained around nest trees where it exists. Some known nest trees in these treatment units are isolated large legacy trees with a canopy well above adjacent trees. Measures to retain legacy trees, large hardwoods and protect existing snags and coarse woody debris would be effective in minimizing impacts to owls and owl prey species in these units and retain dispersal habitat function.

Direct and indirect effects – Gaps, danger trees, noise, pile burning and underburning, road decommissioning

Gap creation and construction or reconstruction of temporary roads and landings would minimally impact owls which are capable of navigating small openings, and there is evidence that small openings may benefit owl foraging habitat (Sakai and Noon 1993, 1997). One study has found that better nutrition appears to occur along low-use forest roads and openings (Hayward and others 2011). Openings greater than 100 meters exceed the glide ability of flying squirrels, but retained trees in larger openings generally allow their movement (Baker and others 2013). Since the diameters of $\frac{3}{4}$ -acre openings would be less than 63 meters, flying squirrel movement would not be appreciably suppressed. Total gap acreage including landings, skylines, and temporary roads would not exceed 20 percent of the area of the unit.

Felling of danger trees that would occur in small scattered locations at landings and along haul routes is not expected to measurably affect owl habitat. Felled trees would remain on site where dead wood is deficient to benefit owl prey species. The number of danger trees felled would be limited to 10 per side of road per mile and 5 within owl nest patches (appendix A), but are expected to be lower based on relatively low snag levels along roads and a very small amount of proposed treatments or haul routes in nest patches. No owl nest trees would be felled.

Research has shown that noise above ambient levels can increase stress responses in nesting birds and may cause them to flush from a nest during incubation of eggs or nestlings which can cause mortality and reproductive failure. Project activities that generate noise above ambient levels such as cutting, heavy equipment operation, and hauling within specific distances of known owl sites or unsurveyed NRF habitat would be restricted during the critical breeding period to minimize disturbance to nesting owls. Details about application of this seasonal restriction are provided in appendix A. Furthermore, project burning would be restricted during the critical breeding season to minimize the potential for smoke to disturb nesting spotted owls depending on smoke dispersal. This restriction is applied within $\frac{1}{4}$ mile of unsurveyed NRF habitat or known nest sites when drift smoke would settle into the stand rather than lift and disperse above the forest canopy. Project burning would most likely occur in late fall through early spring depending on precipitation, smoke management regulations and access to the project area during winter.

Treatment of activity fuels and periodic maintenance burning could result in inadvertent destruction snags and down logs and reduce suitable habitat for northern flying squirrels and other owl prey species. Efforts would be made to retain large snags and large down wood or large accumulations of down wood especially in the DELSH and riparian restoration treatment areas. Conversely, burning can also create snags and down wood though usually these are smaller diameter trees in the understory. Studies have found that low to moderate intensity underburning has limited or no effect on availability of hypogeous fungi which are the primary food of flying squirrels, or on flying squirrel densities, particularly when burned under moist vs dry conditions. (Sollmann et al 2016, Trappe et al, 2009, Smith et al. 2004). Objectives of underburning would differ by restoration treatment objective. For example, underburning in DELSH or riparian restoration units would be less aggressive, less frequent and result in higher proportions of unburned areas than in other

treatment units where conditions are drier and more fire adapted (pine-oak) or where separation of the overstory canopy from ground and ladder fuels is desired (FMZ). Research has shown that severely burned forest areas negatively impact spotted owls and their prey due to loss of habitat, however areas burned with low and moderate intensity do not have the same adverse effects to NRF habitat and may enhance foraging opportunities for spotted owls (Rockweit et al. in press, Jones et al. 2016, Tempel et al. 2015).

Four core areas and six home ranges would benefit from proposed road decommissioning which would reduce human disturbance at a local scale. The core area for site 228 would benefit the most with 0.25 miles followed by site 55 (0.4 mi), Secret Creek (0.1 mi) and site 60 (400 ft). The Secret Creek home range would benefit the most with approximately 4 miles of decommissioning followed by site 55 (3 mi), site 60 (2.5 mi), site 228 (1.3 mi), site 50 (1 mi) and Sam Brown (0.3 mi).

Effects to designated critical habitat

The biological assessment prepared for this project determined that implementation of alternative 2 would be likely to adversely affect critical habitat for the northern spotted owl due to downgrade of NRF in ridgeline FMZ and pine oak treatments and removal of dispersal habitat for meadow restoration. These amount to 0.5 percent and 0.1 percent reductions of these habitats respectively, within the K LW-2 (Klamath West) critical habitat subunit. Though these percentages are small at the scale of the critical habitat subunit, the effects within 500 acres around treatment areas is a measureable reduction (16 percent) and expected to change habitat functionality at this localized scale. However, proposed treatments that would develop and enhance late successional habitat, riparian restoration or roadside FMZ would result in an 8 percent increase in NRF long-term within the same 500-acre areas.

Furthermore, long-term benefits of maintaining meadows and pine-oak habitats in this diverse landscape and increasing fire resilience through prescribed fire and strategically located fuel management zones outweigh the risk of habitat loss to encroachment and lack of fuel treatments in the watershed.

Proposed road decommissioning would decrease the miles of system roads in K LW-2 by 3 percent and would provide localized reduction of human disturbance in NRF and dispersal habitat.

Table 11. NSO habitat pre-treatment condition and Alternative 2 effects for sites analyzed in Upper Briggs Project Action Area

(HR = Home Range, Core (CA) = Core Area, NP = Nest Patch, T&M = treat and maintain.)

Site	Pre-treatment NRF Habitat ¹ (acres)/%			NRF Reduced ² (acres)		Dispersal Reduced (acres)		T&M in Nest Patch (acres)		T&M in Core (acres)		T&M in Home Range (acres)		Post-Treatment NRF Habitat (acres)/%		Effects Rationale (Increases in NRF are estimated from acres of T&M dispersal with DELSH, Riparian Restoration and Roadside FMZ treatments)
	HR	Core	NP	HR	Core	HR	Core	NRF	Disp	NRF	Disp	NRF	Disp	HR	Core	
50	1246 (36)	197 (39)	16 (23)	7	0	0	0	0	0	0	0	228	427	1239 (36)	197 (39)	7 ac NRF downgrade at edge of HR in small patches within low RHS pine-oak restoration. No short-term change in % NRF; <1% long-term increase in HR NRF.
55	1094 (32)	207 (41)	37 (53)	31	0.5	65	7	4	6	42	151	189	690	1063 (31)	206.5 (41)	31 ac NRF reduction in HR for low RHS pine-oak restoration; short-term 1% NRF reduction in deficient HR; ~10% long-term increase. No short-term change in CA % NRF; ~12% long-term NRF increase. Dispersal reduced: HR- 65 ac meadow restoration; CA - 7 ac meadow restoration. Nest Patch TM is along an existing road to be used as a holding line for underburning a pine-oak restoration treatment. Only ladder fuel treatment by hand to safely underburn would occur here.
59	1356 (40)	200 (40)	38 (54)	2	0	0	0	0	0	0	0	0	0	1354 (40)	200 (40)	2 ac NRF downgrade in low RHS ridgeline at edge of Home Range. No change in % NRF.
60	948 (28)	185 (37)	60 (86)	39	0	6	0	0	0	24	49	103	350	909 (27)	185 (37)	39 ac NRF reduction in HR on low RHS ridgeline. 1% short-term NRF reduction in deficient HR; ~8% long-term NRF increase in HR and 10% increase in CA. 6 ac dispersal removed for meadow restoration at edge of HR.

Wild Rivers Ranger District, Rogue River-Siskiyou National Forest

Site	Pre-treatment NRF Habitat ¹ (acres)/%			NRF Reduced ² (acres)		Dispersal Reduced (acres)		T&M in Nest Patch (acres)		T&M in Core (acres)		T&M in Home Range (acres)		Post-Treatment NRF Habitat (acres)/%		Effects Rationale (Increases in NRF are estimated from acres of T&M dispersal with DELSH, Riparian Restoration and Roadside FMZ treatments)
	HR	Core	NP	HR	Core	HR	Core	NRF	Disp	NRF	Disp	NRF	Disp	HR	Core	
228	1007 (30)	151 (30)	35 (49)	17	0.5	10	2	0	0	9	52	64	369	990 (29)	151 (30)	17 ac NRF reduced in HR for low RHS pine-oak restoration. 1% short-term NRF reduction in deficient HR; ~6% long-term NRF increase. No short-term change in CA % NRF; ~6% long-term increase. Dispersal reduced for meadow restoration.
Sam Brown	1356 (40)	251 (50)	38 (54)	72	0.6	54	7	0	0	43	50	158	367	1284 (38)	250 (50)	72 ac NRF reduction in HR on low RHS ridgeline and pine oak restoration. 2% NRF reduction would move HR below threshold in the short-term; ~5% long-term HR NRF increase. No short-term change in CA % NRF. ~9% long-term increase in CA NRF. Dispersal reduced for meadow restoration.
Secret Cr	1488 (44)	185 (37)	43 (61)	175	0.5	5	1	0	4	34	86	185	440	1313 (39)	184 (37)	175 ac NRF reduction would occur in low RHS ridgeline FMZ and for pine-oak restoration. These acres are spread out at the edges of the Home Range. 5% NRF reduction would move HR 1% below threshold in the short term; ~7% long-term increase in HR NRF. No short-term change in CA % NRF. ~16% long-term increase in CA NRF

Alternative 3

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ

These treatments under alternative 3 would occur in approximately 6 percent of the watershed, only treat managed stands less than 80 years in age, cut only trees less than 80 years in age and increase the no-treat riparian buffer to 120 feet. Fewer acres would be treated to accelerate development of a multi-layered canopy and increase stand structure complexity to reduce NRF fragmentation. Conversely, there would be less incidental loss of dead wood to thinning operations and fuel treatments. This alternative would require fewer landings and no temporary road construction which would decrease habitat modification. Disturbance effects from hauling would be decreased because there would be fewer loads required. Total acres of these treatments that would maintain existing habitat function include approximately 646 acres of dispersal, and 323 acres of NRF. Treatments in existing NRF would increase the rate of development of high quality NRF, and dispersal treatment would result in a 3% increase in NRF at an accelerated rate within the watershed. Table 12 displays the amount of these treatments (T&M) in NSO core areas and home ranges under alternative 3 which are expected to increase the amount of high quality NRF for six of the seven sites in the long-term. A three to five percent increase in NRF is expected in five home ranges which would put them closer to the minimum amount of NRF needed for successful breeding. Four core areas would have one percent or less increase in NRF and Secret Creek would have a 12 percent increase in NRF which would put it within one percent (49%) of the minimum NRF threshold in the core area. Two sites would have no change in long-term NRF under alternative 3.

Direct and indirect effects – Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

These treatments would occur in less than 5 percent of the watershed in stands under 80 years in age. Approximately half the acres of ridgelines would be treated resulting in less continuous fuel management zones and 1 percent fewer acres of pine-oak restoration would occur compared to alternative 2. Downgrade of NRF habitat would occur on 13 acres within these treatment areas, though the age cut limit of 80 years may result in more acres with higher than 40 percent canopy which would continue to benefit owls and their prey in the short-term. Approximately 56 acres of dispersal would be removed for meadow restoration which is about 10 acres less than alternative 2 due to the wider no-cut buffer along streams. Restoration goals for pine-oak and meadow habitat would be accomplished in 2 percent less of the watershed than alternative 2 and prescribed burning would be limited to smaller, disjunct areas which would be less effective for increasing fire resiliency and wildland fire management options in the future, therefore providing less potential for long-term owl habitat persistence in the watershed.

Direct and indirect effects – Gaps, danger trees, noise, pile burning and underburning

Implementation of alternative 3 would not require temporary road construction, and fewer acres of landing construction. Landings and gaps would be limited to 20 percent of treated acres and limitations on danger tree felling would be the same as alternative 2. In addition, seasonal restrictions to minimize noise and smoke disturbance to owls would be implemented the same.

Maintenance underburning would occur on treated acres but would be less extensive, particularly with reduced ridgeline FMZ maintenance, providing less fire resilience and habitat diversity than under alternative 2.

Effects to designated critical habitat

Implementation of alternative 3 would also adversely affect critical habitat for the northern spotted owl due to downgrade of NRF in ridgeline FMZ and pine oak treatments and removal of dispersal habitat for meadow restoration. These amount to less than 0.1 percent reductions of these habitats

respectively, within the KLV-2 (Klamath West) critical habitat subunit. Though these percentages are small at the scale of the critical habitat subunit, the effects within 500 acres of the treated areas is a measureable reduction in NRF (4 percent) and expected to change the functionality of the habitat at this localized scale, however it would be balanced by a 4 percent long-term increase in NRF expected from DELSH, riparian restoration and roadside FMZ treatments.

Furthermore, alternative 3 would provide long-term benefits of maintaining meadows and oak woodlands and provide reduced fuel loading along publicly-used roads, though to a lesser extent than under alternative 2. Road decommissioning would have the same benefits described for alternative 2.

Cumulative Effects to Federally Listed Species

The private lands which comprise 2 percent of the Upper Briggs Creek watershed are not considered to contribute long-term owl habitat in the watershed. Treatment of approximately 500 acres of plantations throughout the watershed (covered by separate NEPA and consultation) and adjacent to proposed units may occur concurrently with proposed Upper Briggs treatments (e.g. underburning). These plantations are either non-habitat for owls or dispersal that would continue to function as dispersal habitat post-treatment. The same restrictions to avoid disturbance to owls during the critical breeding season would be applied to these activities. It is desirable to treat these young stands to promote their development into suitable dispersal or NRF habitat for owls. Because these treatments are not all expected to occur at once throughout the watershed the additive impacts of proposed treatments to owls and designated critical habitat would be minor.

There would be no accumulation of disturbance effects to owls during the critical breeding season with other activities such as recreation and mining, because seasonal restrictions to eliminate project-related noise and smoke disturbance would be implemented under both action alternatives.

Table 12. NSO habitat pre-treatment condition and Alternative 3 effects for sites analyzed in Upper Briggs Project Action Area

(HR = Home Range, Core (CA) = Core Area, NP = Nest Patch, T&M = treat and maintain.)

Site	Pre-treatment NRF Habitat ¹ (acres)/%			NRF Reduced ² (acres)		Dispersal Reduced (acres)		T&M in Nest Patch (acres)		T&M in Core (acres)		T&M in Home Range (acres)		Post-Treatment NRF Habitat (acres)/%		Effects Rationale (Increases in NRF are estimated from acres of T&M dispersal with DELSH, Riparian Restoration or Roadside FMZ treatment)
	HR	Core	NP	HR	Core	HR	Core	NRF	Disp	NRF	Disp	NRF	Disp	HR	Core	
50	1246 (36)	197 (39)	16 (23)	0	0	0	0	0	0	0	0	12	17	1246 (36)	197 (39)	No change in % NRF
55	1094 (32)	207 (41)	37 (53)	10	0	56	7	2.5	4	26	96	87	388	1084 (32)	207 (41)	<p>10 ac NRF reduction in HR for low RHS pine-oak restoration; < 1% short-term NRF reduction in deficient HR; ~4% long-term increase.</p> <p>No short-term change in CA % NRF; <1% long-term NRF increase.</p> <p>Dispersal reduced: HR- 56 ac meadow restoration; CA - 7 ac meadow restoration.</p> <p>Nest Patch TM is along an existing road to be used as a holding line for underburning a pine-oak restoration treatment. Only ladder fuel treatment by hand to safely underburn would occur here.</p>
59	1356 (40)	200 (40)	38 (54)	2	0	0	0	0	0	0	0	0	0	1354 (40)	200 (40)	2 ac NRF downgrade in low RHS ridgeline at edge of Home Range. No change in % NRF.
60	948 (28)	185 (37)	60 (86)	10	0	2	0	0	0	22	47	72	266	938 (28)	185 (37)	<p>10 ac NRF reduction in HR on low RHS ridgeline. <1% short-term NRF reduction in deficient HR; ~5% long-term NRF increase in HR and ~1% increase in CA.</p> <p>2 ac dispersal removed for meadow restoration at edge of HR.</p>

Wild Rivers Ranger District, Rogue River-Siskiyou National Forest

Site	Pre-treatment NRF Habitat ¹ (acres)/%			NRF Reduced ² (acres)		Dispersal Reduced (acres)		T&M in Nest Patch (acres)		T&M in Core (acres)		T&M in Home Range (acres)		Post-Treatment NRF Habitat (acres)/%		Effects Rationale (Increases in NRF are estimated from acres of T&M dispersal with DELSH, Riparian Restoration or Roadside FMZ treatment)
	HR	Core	NP	HR	Core	HR	Core	NRF	Disp	NRF	Disp	NRF	Disp	HR	Core	
228	1007 (30)	151 (30)	35 (49)	13	0	0	0	0	0	8	46	35	260	994 (29)	151 (30)	13 ac NRF reduced in HR for low RHS pine-oak restoration. 1% short-term NRF reduction in deficient HR; ~3% long-term NRF increase. No short-term change in CA % NRF; <1% long-term increase.
Sam Brown	1356 (40)	251 (50)	38 (54)	10	0	40	5	0	0	37	34	95	143	1346 (40)	251 (50)	10 ac NRF reduction in HR on low RHS ridgeline and pine oak restoration. <1% NRF reduction would maintain HR at threshold in the short-term; ~3% long-term HR NRF increase. No short-term change in CA % NRF. <1% long-term increase in CA NRF. Dispersal reduced for meadow restoration.
Secret Cr	1488 (44)	185 (37)	43 (61)	75	0	0	0	0	0	21	59	113	254	1413 (41)	185 (37)	75 ac NRF reduction would occur in low RHS ridgeline FMZ and for pine-oak restoration. These acres are spread out at the edges of the Home Range. 3% NRF reduction would maintain HR 1% above threshold in the short term; ~5% long-term increase in HR NRF. No short-term change in CA % NRF. ~12% long-term increase in CA NRF

Effects to Other Wildlife Species

A comparison of effects for alternatives 2 and 3 to Region 6 sensitive species are summarized in table 16. Percentages of area affected is derived from Table 2.

Table 13. Summary comparison of effects for action alternatives to Region 6 sensitive species.

Common Name	Alternative 2	Alternative 3
Pacific fisher	21% of Upper Briggs fisher habitat affected: DELSH/riparian treatment (9%) would have long-term enhancement, FMZ/pine oak (12%) would reduce canopy long-term, but would retain important hardwood habitat component in the watershed.	16% of fisher habitat affected: DELSH/riparian treatment (4%) would have long-term enhancement, FMZ/pine oak (12%) would reduce canopy long-term, but retain hardwood component.
Pacific marten (coastal)	Would benefit from 5% of Upper Briggs with long-term enhancement of stand complexity (DELSH). Long term FMZ maintenance would reduce understory complexity in 7% of watershed.	Would benefit from 2% of Upper Briggs with long-term enhancement of stand complexity (DELSH). Long term FMZ maintenance in 5% of watershed would reduce understory complexity.
Lewis' woodpecker & White-headed woodpecker	Pine-oak and FMZ treatments would favor development of large pine and more open habitat in 7-10% of the watershed. DELSH treatments would increase late successional habitat structure for WHW (4%). Incidental loss of snags for danger tree mitigation.	Pine-oak and FMZ treatments would favor development of large pine and more open habitat in 4-7% of the watershed. DELSH treatments would increase late successional habitat structure for WHW (2%). Incidental loss of snags for danger tree mitigation would be less than alt 2.
Purple martin	Would benefit from riparian and meadow restoration treatments that increase or maintain riparian and edge diversity in less than 2% of the watershed. Incidental loss of snags for danger tree mitigation.	Approx. 117 acres less riparian and meadow restoration than alt 2 in the watershed. Incidental loss of snags for danger tree mitigation would be less than alt 2.
Oregon shoulderband & Travelling sideband	Oregon shoulderband unlikely, Travelling sideband common in watershed. Any treatments in moist, rocky habitat with mixed conifer-hardwood overstory could disturb or harm habitat or individuals, especially in warm, wet weather. Treatments to increase riparian habitat diversity and maintain hardwoods would benefit these species.	Same impacts as alt 2, however less extensive due to fewer acres treated (11% vs 16% of watershed total)
Franklin's & Western bumble bees	Franklin's unlikely in watershed, Treatments that increase understory sunlight and flowering plant diversity would provide more nectar and pollen. Ground disturbing activities could harm individuals, nests or cause short-term loss of forage.	Similar impacts as Alt 2, however less extensive due to fewer acres treated (11% vs 16% of watershed total).

Coronis fritillary	Presence in watershed not well documented. Very small amount of potential larval habitat in watershed may be impacted by FMZ maintenance (underburning). Nectar sources (forage) may be enhanced by treatments that increase sunlight and understory diversity, short term loss of forage due to underburning.	Similar impacts as Alt 2 with less potential larval habitat in treatment units.
Johnson's hairstreak	Treatments that increase development of DELSH (4% of watershed) and retain legacy pines would benefit this species and treatments that increase nectar sources. Short-term loss of nectar from underburning. Possible loss of eggs and larvae from disturbance or removal of suitable mistletoe host.	Similar impacts as alt 2 with less DELSH treatment (2%) and fewer acres of potential disturbance or loss of host mistletoe and nectar sources.
Pallid bat, Fringed myotis	Incidental loss of snags or potential disturbance of individuals from project activities and danger tree mitigation. Retention and promotion of legacy trees in treatment units would promote future large snag habitat.	Similar impacts as alt 2, though less extensive (11% vs 16% of watershed).

No Action Alternative

Taking no action would not directly affect terrestrial wildlife or their habitats. Tree growth and mid-canopy development would be suppressed until a natural event (wind throw, fire or disease) opened gaps in the canopy. There would be no increase in small openings from landing or temp road construction or gap creation. Self-thinning in managed and unmanaged stands would continue at current rates, including the accumulation of dead wood. Generally this dead wood would be smaller diameters (< 15-inch DBH) and would not persist over time to the same extent as larger wood or provide nesting cavities for wildlife that require larger snags or hollow logs, such as fishers, martens, bats, woodpeckers and secondary cavity nesters. Stands of shade-intolerant and fire adapted species such as black and white oak, ponderosa pine, sugar pine, Sophora, etc. would continue to compete with high tree densities and ingrowth of Douglas-fir. Riparian diversity would continue to diminish where conifer encroachment is shading out hardwoods and riparian shrubs. Prescribed fire would only occur in treated plantations and possibly Sam Brown and Horse Creek meadows. Ridgeline and roadside vegetation would not be treated for fuel accumulations and would receive standard fire-suppression treatments in the event of a wildland fire. Roads would not be decommissioned and would continue on their trajectory of closing naturally as vegetation grows.

Wildlife reliant on dense canopy and understory, such as marten and red tree voles, would continue to use these stands, along with birds associated with mature forest and dense vegetation (thrushes, several warblers and flycatchers).

Species which benefit from openings that provide grasses, forbs and flowering shrubs and riparian hardwoods (e.g. ungulates, birds associated with deciduous vegetation and nectar-producing plants, and pollinators), would continue to minimally use or avoid the area until natural processes create these habitats.

Proposed Action Alternative 2

Effects common to all species

Effects of proposed road closure and decommissioning would benefit all species considered by reducing human disturbance and restoring natural habitat at those sites.

Pacific Fisher and Pacific (coastal) Marten

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ

Fishers and martens are associated with late successional habitat with high canopy cover and decadence components (snags, large down wood). Martens are more associated with high densities of understory shrubs and large down wood which gives them a predatory advantage. Alternative 2 proposed treatments would occur in 9 percent of combined denning/resting and dispersal/foraging habitats for fishers and within 8 percent of the entire watershed. These treatments would maintain suitability of current fisher and marten habitat and increase development of denning/resting habitat in the long term. Proposed variable density thinning for accelerated development of a complex and resilient forest, with retention of legacy trees and large hardwoods in the DELSH and riparian restoration treatments would benefit fishers by increasing suitable denning/resting habitat and benefit martens by increasing understory complexity.

Roadside FMZ treatments would increase the rate of large tree growth by reducing ingrowth and stimulating understory shrubs and hardwoods. These treatments are designed to retain large hardwoods and increase sunlight in the stands to stimulate understory growth and diversity that would increase foraging opportunities for fishers and martens. Large snags and down wood would also be retained to the extent practicable however some incidental damage or destruction of these features may occur due to tree felling, yarding corridors, ground-based equipment and danger tree felling. The watershed is currently not deficit in down wood and is slightly below reference values for low snag densities per acre, but matches reference levels for high snag densities per acre. Vegetation simulation modeling of these treatments indicates that they would accelerate development of large trees that would become snags and down wood in the long term and pile burning and underburning may also create snags in some locations.

Direct and indirect effects – Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

These treatments would occur within 12 percent of combined denning/resting and dispersal/foraging habitats for fishers. Reduction of overstory canopy to 40 percent would make this habitat less suitable for fishers and martens though it may still serve as fisher foraging habitat. With retention of legacy trees, black oak and other large hardwoods, the pine-oak restoration units would likely provide long-term denning and foraging habitat that would benefit fishers. These treatments would also retain large snags and down wood to the extent practicable, however some loss is expected in strategic ridgeline FMZs where underburning may occur more frequently. Overall, these treatments would enhance habitat diversity and foraging opportunities for fishers, but may reduce habitat suitability for martens which prefer dense brush, within approximately 8 percent of the watershed.

Direct and indirect effects – Gaps, danger trees, noise, pile burning and underburning

Gaps and underburning would increase shrub and grass habitat in the project area which would benefit prey species and increase foraging opportunities especially at the forest edges of these openings. Danger tree felling would reduce snags which would be left for down wood where it is deficient. Pile and underburning may create snags in locations with heavy concentrations of fuels. Seasonal restrictions to avoid disturbance to spotted owls would also benefit fishers and martens during the breeding season, but they would likely avoid habitat directly involved with project activities during implementation.

Cumulative Effects

Proposed treatments that may occur concurrently with adjacent plantation treatments would be additive in that more acres would be avoided by fishers and martens during treatment activities. Additive long-term benefits include increased foraging opportunities and development of dispersal,

denning and resting habitats for fishers and increased interior forest habitat for martens. Regeneration of brush and trees in the moderate and high severity portions of the Onion Mountain fir within the watershed would also provide a 2 percent increase in brushy habitat for martens in the long-term.

Implementation of alternative 2 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species for Pacific fisher or Pacific marten** (coastal population) due to potential disturbance to individuals and limited adverse effects to habitat from treatments. Adverse effects are limited to short-term effects where treatments will increase large tree development and understory complexity in 9 percent of suitable fisher habitat in the watershed, and long-term impacts where treatments result in canopy reduction below 60 percent in approximately 12 percent of fisher habitat the watershed, though they would create suitable fisher denning and foraging habitat in oak restoration units, they would not likely benefit martens.

Lewis' woodpecker, white-headed woodpecker

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ

Treatments would benefit these woodpeckers by promoting development of large pine live trees and snags in the landscape over the long term. Roadside FMZs in particular include some areas comprising less than 3 percent of the watershed where open pine-oak habitat would be enhanced and maintained with treatment of Douglas-fir ingrowth and underburning.

Direct and indirect effects – Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

These alternative 2 treatments to restore and maintain pine-oak habitat and open pine stands on ridgelines would increase nesting and foraging habitat in 7 percent of the watershed for these woodpeckers in the short and long term.

Direct and indirect effects – Gaps, danger trees, noise, pile burning and underburning

Gaps would provide some edge habitat, but probably wouldn't be large enough to provide a substantial increase in habitat for these woodpeckers. Felling of snags for danger tree mitigation may reduce snags in the short-term, but the overall proposal would increase the potential for higher numbers of large pine snags in the future. Disturbance restrictions for spotted owls would benefit these woodpeckers in the breeding season. Large snags would be retained to the extent possible during burning operations.

Cumulative Effects

The high and medium severity portions of the Oak Flat and Onion Mountain fires provide areas with high snag densities in approximately 9 percent of the watershed. Proposed treatments that may occur concurrently with adjacent plantation treatments would be additive in the scale (acres) of disturbance and habitat avoided during treatment activities. Additive long-term benefits include increased resilience of pine-oak habitat to fire and drought and large snag development.

Implementation of alternative 2 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species for Lewis's woodpecker or the white-headed woodpecker** due to potential disturbance to individuals during treatments and minimal adverse effects to habitat from loss of snags for danger tree mitigation.

Purple martin

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ, Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

Proposed treatments for riparian restoration that would increase or maintain riparian habitat diversity or edge habitat complexity next to meadow openings and the restoration of meadow boundaries from conifer encroachment would most benefit purple martins. Riparian and meadow

restoration activities are proposed in less than 2 percent of the watershed. Treatments that retain or promote development of large snags would potentially provide cavities large enough for colonies of martin. This includes all of the proposed treatments.

Direct and indirect effects – Gaps, danger trees, noise, pile burning and underburning

Gaps would provide some openings, but likely not in locations that would benefit martins. Noise and smoke and burning could cause short-term avoidance of suitable habitats. Seasonal restrictions to avoid disturbance to northern spotted owls would also benefit this species.

Cumulative Effects

Proposed treatments that may occur concurrently with adjacent plantation treatments would be additive in the scale (acres) of disturbance and habitat avoided during treatment activities.

Implementation of alternative 2 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species for the purple martin** due to potential disturbance to individuals during treatments and minimal adverse effects to habitat from loss of snags for danger tree mitigation.

Oregon shoulderband, travelling sideband

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ

Potential impacts for these low-mobility species may include mortality from tree felling and equipment operation. Large down wood, large hardwoods and rocky areas would be retained and avoided to the extent possible, but some incidental loss or disturbance of these habitats may occur. No-treat protection buffers on riparian areas would protect some potential habitat and any individuals that may occur there. Treatments that increase hardwood growth and diversity and development of late successional habitat structure would benefit these species.

Direct and indirect effects – Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

Similar impacts would be expected as described in the previous paragraph and rocky areas, large hardwoods and large down wood would be avoided and retained to the extent possible. Riparian protection buffers and retention of legacy trees would be implemented in these units.

Direct and indirect effects – Gaps, danger trees, noise, pile burning and underburning

Gap creation could cause some areas to be drier and less suitable for these species, however the project is designed to retain moist microclimate locations within units. Incidental danger tree felling may provide down wood habitat where site conditions are suitable with cover and moisture. Direct mortality could occur from pile burning and underburning, however units with suitable habitat conditions for these species (DELSH, riparian restoration) would not be burned as aggressively or as frequently as pine-oak and FMZ units. Underburning to maintain FMZs and pine-oak habitat may result in more loss of down wood and possibly increased mortality of the travelling sideband since it is more prevalent in the project area particularly if burning is done in the spring. These animals have not been observed to be as active in the fall, therefore fall burning would be preferred where there is habitat for these species.

Cumulative Effects

Proposed treatments such as pile and underburning that may occur concurrently with adjacent plantation treatments would be minimally additive in the scale (acres) of potential habitat disturbance or loss of individuals because plantations usually do not provide suitable habitat for these species.

Implementation of alternative 2 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species for the Oregon Shoulderband or Travelling Sideband** due to potential loss of individuals during

treatments and minimal adverse effects to habitat from loss down wood habitat. The travelling sideband is more likely to be affected because it is widely present in the project area, whereas the Oregon shoulderband is less likely to occur in project units.

Franklin's and western bumble bees

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ, Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ, Gaps, danger trees, noise, pile burning and underburning

There is a very low likelihood that these species are present in the project area based on the rarity of them in more suitable habitat where western bumble bees have been documented recently near Mt Ashland, however, proposed treatments that would create openings or maintain and restore meadows and riparian habitat diversity would most benefit these bumble bees. Restoration treatments that include planting and increasing the diversity of flowering plants throughout the year would increase pollen and nectar availability. Treatments that provide more sunlight to flowering hardwoods such as madrone and a variety of flowering shrubs can also provide more forage. However, ground disturbing activities such as equipment operation and high intensity burning during the spring, early summer or early fall could cause direct mortality of individuals or destroy bumble bee nests.

Cumulative Effects

Proposed treatments that may occur concurrently with adjacent plantation treatments would be additive in the scale (acres) of disturbance and potential loss of individuals or nest sites during treatment activities.

Implementation of alternative 2 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species for the western bumble bee or Franklin's bumble bee** due to potential loss of individuals or nests during treatment activities, though they are rare throughout their range.

Coronis fritillary

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ, Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

Roadside and Strategic Ridgeline FMZs may include some small amounts of suitable serpentine habitat for this species. Two observations of individual adults (1 unconfirmed) have been recorded in the project area, though a breeding population of this species has not been documented in the project area. There is a low possibility that direct mortality of eggs or larvae may result from burning activities in potential serpentine habitat. Disturbance or short-term reduction of nectar plants from ground disturbing activities may reduce available forage for adults. Adults of this species would likely avoid areas during activities. Treatments that favor pine and reduce shading in serpentine habitats would maintain or enhance habitat for *viola hallii* and nectar plants in the long-term.

Direct and indirect effects – Gaps, danger trees, noise, pile burning and underburning

Gap creation may disturb potential habitat next to roads, but areas where this habitat occurs within project units would likely be treated with non-commercial manual thinning and/or underburning. Danger tree felling and noise would not have measurable effects to this species. Pile burning and underburning may cause direct mortality of eggs or larvae which would occur in less than 1 percent of the watershed. Serpentine habitat occupies approximately 16 percent of the Upper Briggs watershed.

Cumulative Effects

Approximately 2 percent of the watershed burned with high severity and 7 percent with moderate severity in the Oak Flat and Onion Mountain fires which likely at least temporarily reduced

suitable habitat for this species in some locations. Proposed underburning may have a small additive affect due to a very small amount of potential habitat within proposed units. These areas would likely have low burn intensity during underburning due to the lack of fuels in this habitat type. Plantations planned for treatment concurrently with proposed units do not contain suitable habitat for this species.

Implementation of Alternative 2 **May Impact Individuals and or Habitat, but not likely to cause a trend to federal listing or a loss of viability to the population or species** for the **Coronis fritillary butterfly** due to potential loss of individuals (primarily eggs, caterpillars or pupae) or habitat from burning activities which would occur in a very small percentage (< 1 percent) of the habitat available in the watershed.

Johnson's hairstreak

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ

The presence of this species is strongly associated with the abundance of dwarf mistletoe which can occur in all age classes of forest, but is most abundant in mature stands and old-growth. Single-storied stands in stem exclusion phase usually have the poorest conditions for this mistletoe requires sunlight and multiple tree layers to provide optimal growing conditions. The stand age, structure and species composition of the units proposed for these treatments do not contain substantial dwarf mistletoe that would provide habitat for the caterpillars. Some of the older forest stands in the vicinity of these units that are not proposed for treatment may provide more suitable conditions for the mistletoe used by this species. Trees greater than 120 years in age would be retained in these treatments and Douglas-fir is the primary species that would be cut for these treatments. Short-term effects would be limited to cutting of any younger pine that may be infected with mistletoe that may also cause direct mortality of eggs or caterpillars. This would occur in a small percentage of the pine available in the vicinity of the treatments that will not be disturbed.

These treatments intend to enhance and increase the development of late successional forest structure and composition including understory shrubs and forbs that would provide nectar plants for these butterflies.

Direct and indirect effects – Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

Legacy pines present in these treatment units may provide suitable conditions for dwarf mistletoe development. All trees greater than 120 years old would be retained. Cutting of younger pine may result in loss of some mistletoe and possibly eggs or caterpillars, but would be a small reduction of less optimal habitat than what would remain in the legacy overstory and adjacent stands not proposed for treatment.

Direct and indirect effects – Gaps, danger trees, noise, pile burning and underburning

Gap creation may include removal of young trees infected with mistletoe that may also host caterpillars though it is not very prevalent in the units proposed for treatment. Gaps would stimulate growth of flowering plants that provide nectar for these butterflies. Danger tree felling and noise disturbance from activities would not measurably affect this species. Pile and underburning also would have minimal effects of possible short-term reductions in nectar producing shrubs immediately following burning. Maintenance burning of FMZs may result in a long-term reduction of nectar producing plants particularly on strategic ridgelines, however these treatments are intended to increase the potential for more optimal late successional habitat to remain in the watershed over the long-term.

Cumulative Effects

Plantations do not provide optimal habitat for dwarf mistletoe used by this species, but may be comprised of flowering shrubs that provide nectar. Proposed treatments (thinning and underburning) that may occur concurrently with adjacent plantation treatment would be additive in

short-term reduction of nectar plants, however these would be localized reductions because not all of the burning treatments are expected to occur at the same time (less than 17% of the watershed) and abundant nectar habitat is available in brushy areas not proposed for treatment.

Implementation of alternative 2 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species** for the **Johnson's hairstreak butterfly** due to potential loss of individuals (primarily eggs, caterpillars or pupae) from cutting and burning activities. This loss is expected to be a small percentage of the population due to lack of optimal habitat in the treatment units compared to habitat available in areas that will not be treated.

Pallid bat, fringed myotis

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ, Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ, Gaps, danger trees, noise, pile burning and underburning

All treatments would retain large snags that may provide roost sites to the extent practicable, however incidental disturbance of individual bats during project activities and loss of snag roosts due to danger tree felling may occur during project activities.

Cumulative Effects

Danger tree felling for proposed project activities may be additive to danger tree felling that occurs for routine road maintenance or hazard tree felling in developed recreation sites. The analysis of snag densities in the watershed indicate that overall snag levels are near reference conditions and proposed activities intend to increase the development of large trees for future snags.

Implementation of alternative 2 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species** for the **pallid bat** or **fringed myotis** due to potential disturbance of individuals or loss of a small number of large snags from danger tree felling.

Alternative 3

Effects from alternative 3 would generally be the same as alternative 2, but less in amount and intensity of treatments (Table 2 and Appendix F Table 21). Fewer acres would be treated to achieve ecological objectives. Approximately 5 percent less of the watershed would be treated under alternative 3 which means fewer acres of gap creation including landings and skyline corridors, less incidental loss of snags and down wood, and less pile and underburning activities. There would be fewer loads hauled under alternative 3. Overall, duration and extent of noise disturbance and incidental direct mortality of wildlife would be less than alternative 2.

Conversely, intended ecological benefits from proposed treatments would not be realized in as much of the watershed as alternative 2 (11 percent compared to 16 percent). Only stands less than 80 years in age would be treated which would result in more isolated treatments that may not meet objectives. For example, roadside and ridgeline FMZs may not provide desired effectiveness due to higher tree density from retention of all trees greater than 80 years in age and the isolated arrangement of these treatments by not including entire ridgelines or continuous segments of roads. Furthermore, less riparian diversity including shrub and hardwood retention and development would occur with wider riparian no-treat buffers.

Proposed road closure and decommissioning would benefit all species by reducing human disturbance and restoring natural habitat at those sites.

The degree of potential effects to individuals and habitats compared to alternative 2 are described below for each affected species.

Pacific Fisher and Pacific (coastal) Marten

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ

These proposed treatments would occur in 4 percent of combined denning/resting and dispersal/foraging habitats mapped for fishers within the entire watershed compared to 9 percent of these habitats under alternative 2. Fewer acres of these treatments would reduce opportunities to increase mature forest habitat for fisher and marten in a shorter time frame than no treatment.

Habitat enhancement such as stimulation of understory shrubs and multi-canopy layering, and development and retention of black oak in dense stands would occur in 6 percent compared to 8 percent of the entire watershed under alternative 2.

Direct and indirect effects – Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

These treatments would occur within 12 percent of combined denning/resting and dispersal/foraging habitats for fishers which is the same amount of these habitats affected under alternative 2. Less acres of ridgeline FMZ treatments would leave more stands with high levels of understory brush which is favorable to martens. Approximately 220 fewer acres of pine oak restoration would reduce opportunities to increase denning habitat for fisher.

Cumulative Effects

Effects of proposed treatments that may occur concurrently with adjacent plantation treatments would be additive in that more acres would be avoided by fishers and martens during treatment activities. Additive long-term benefits include increased foraging opportunities and development of dispersal, denning and resting habitats for fishers and increased interior forest habitat for martens.

Regeneration of brush and trees in the moderate and high severity portions of the Onion Mountain fir within the watershed would also provide a 2 percent increase in brushy habitat for martens in the long-term.

Implementation of alternative 3 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species for Pacific fisher or Pacific marten** (coastal population) due to potential disturbance to individuals and limited adverse effects to habitat from treatments. Adverse effects are limited to short-term effects where treatments will increase large tree development and understory complexity in 4 percent of suitable fisher habitat in the watershed, and long-term impacts where treatments result in canopy reduction below 60 percent in approximately 12 percent of fisher habitat the watershed, which would favor fisher denning and foraging habitat in oak restoration units, but not likely benefit martens.

Lewis' woodpecker, white-headed woodpecker

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ

These treatments would benefit these woodpeckers by promoting development of large pine live trees and snags in approximately 6 percent of the landscape over the long term (compared to 8 percent under alternative 2).

Direct and indirect effects – Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

These treatments to restore and maintain pine-oak habitat and open pine stands on ridgelines would increase nesting and foraging habitat for these woodpeckers in 5 percent of the watershed compared to 7 percent under alternative 2.

Cumulative Effects

The high and medium severity portions of the Oak Flat and Onion Mountain fires provide areas

with high snag densities in approximately 9 percent of the watershed. Proposed treatments that may occur concurrently with adjacent plantation treatments would be additive in the scale (acres) of disturbance and habitat avoided during treatment activities. Additive long-term benefits include increased resilience of pine-oak habitat to fire and drought and large snag development.

Implementation of alternative 3 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species for Lewis's woodpecker or the white-headed woodpecker** due to potential disturbance to individuals during treatments and minimal adverse effects to habitat from loss of snags for danger tree mitigation.

Purple martin

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ, Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

alternative 3 proposes approximately 120 fewer treatment acres than alternative 2 for riparian and meadow restoration that would benefit purple martins. These acres comprise less than 2 percent of the entire watershed.

Cumulative Effects

Proposed treatments that may occur concurrently with adjacent plantation treatments may be additive in the scale (acres) of disturbance and habitat avoided by martins during treatment activities.

Implementation of alternative 2 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species for the purple martin** due to potential disturbance to individuals during treatments and minimal adverse effects to habitat from loss of snags for danger tree mitigation.

Oregon shoulderband, travelling sideband

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ

These activities may impact these species approximately 6 percent of the watershed compared to 8 percent under alternative 2. Impacts include direct mortality or minimal disturbance of large down wood, hardwoods, and rocky habitats.

Direct and indirect effects – Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

Similar impacts would be expected as described in previous paragraph though more down wood may be lost due to more frequent maintenance burning in these areas. These activities may affect 5 percent of the watershed compared to 8 percent under alternative 2.

Direct and indirect effects – Gaps, danger trees, noise, pile burning and underburning

Alternative 3 would have less gap creation than alternative 2 reducing the potential for drier and less suitable habitat for these species. Direct mortality could occur from pile burning and underburning which would occur nearly half the acres of alternative 2.

Implementation of alternative 3 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species for the Oregon Shoulderband or Travelling Sideband** due to potential loss of individuals during treatments and minimal adverse effects from disturbance or loss of suitable habitat. The travelling sideband is more likely to be affected because it is widely present in the project area, whereas the Oregon shoulderband low likelihood of occurrence in the project units.

Franklin's and western bumble bees

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ, Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ, Gaps, danger trees, noise, pile burning and underburning

Alternative 3 would treat 5 percent less of the landscape and would result in less openings and riparian habitat diversity and less understory stimulation of flowering plants due to fewer acres treated than alternative 2. However, fewer acres of ground disturbing activities such as equipment operation and burning during the spring, early summer or early fall would reduce potential direct mortality of bees or destruction of bumble bee nests.

Cumulative Effects

Proposed treatments that may occur concurrently with adjacent plantation treatments would be additive in the scale (acres) of disturbance and potential loss of individuals or nest sites during treatment activities but would be less extensive than alternative 2.

Implementation of alternative 2 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species** for the **western bumble bee or Franklin's bumble bee** due to potential loss of individuals or nests during treatment activities, though they are rare throughout their ranges.

Coronis fritillary

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ, Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ

Alternative 3 proposes less Strategic Ridgeline FMZ treatments which would reduce the amount of suitable serpentine habitat affected. There is a low possibility that direct mortality of eggs or larvae may result from burning activities in potential serpentine habitat remaining in this alternative. Disturbance or short-term reduction of nectar plants from ground disturbing activities may reduce available forage for adults. Adults of this species would likely avoid areas during activities. Treatments that favor pine and reduce shading in serpentine habitats would maintain or enhance habitat for *viola hallii* and nectar plants in the long-term.

Direct and indirect effects – Gaps, danger trees, noise, pile burning and underburning

Pile burning and underburning may cause direct mortality of eggs or larvae, though these activities would be less extensive than alternative 2 and affect a very small portion of available serpentine habitat which occupies approximately 16 percent of the Upper Briggs watershed.

Cumulative Effects

Proposed underburning may have a small additive effect to previous fire in the watershed due to a very small amount of potential habitat within proposed units. These areas would likely have low burn intensity during underburning due to the lack of fuels in this habitat type. Plantations planned for treatment concurrently with proposed units do not contain suitable habitat for this species.

Implementation of Alternative 3 **May Impact Individuals and or Habitat, but not likely to cause a trend to federal listing or a loss of viability to the population or species** for the **Coronis fritillary butterfly** due to potential loss of individuals (primarily eggs, caterpillars or pupae) or habitat from burning activities which would occur in a very small percentage (< 1 percent) of the habitat available in the watershed.

Johnson's hairstreak

Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ

Alternative 3 would treat stands less than 80 years in age across approximately 6 percent of the watershed which may have short-term effects limited to cutting of any younger pine that may be infected with mistletoe that may also cause direct mortality of eggs or caterpillars. This would occur in a small percentage of the pine available in the vicinity of the treatments that will not be disturbed. These treatments intend to enhance and increase the development of late successional forest structure and composition including understory shrubs and forbs that would provide nectar plants for these butterflies in a smaller portion of the watershed compared to alternative 2.

Direct and indirect effects – Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic

Ridgeline FMZ

These treatments would occur in stands less than 80 years in age across 5 percent of the watershed compared to 8 percent under alternative 2. Cutting of younger pine may result in loss of some mistletoe and possibly eggs or caterpillars, but would be a small reduction of less optimal habitat than what would remain in the adjacent stands not proposed for treatment. Treatments may increase understory flowering plants.

Direct and indirect effects – Gaps, danger trees, noise, pile burning and underburning

Gap creation may include removal of young trees infected with mistletoe that may also host caterpillars and stimulate growth of flowering plants that provide nectar for these butterflies, but to a lesser degree than alternative 2. Likewise, to a lesser degree than alternative 2, pile and underburning may reduce nectar sources in the short-term and maintenance burning of FMZs may result in a more long-term reduction of nectar producing plants particularly on strategic ridgelines, however these treatments are intended to increase the potential for more optimal late successional habitat to remain in the watershed over the long-term.

Cumulative Effects

Plantations do not provide optimal habitat for dwarf mistletoe used by this species, but may be comprised of flowering shrubs that provide nectar. Proposed treatments (thinning and underburning) that may occur concurrently with adjacent plantation treatment would be additive in short-term reduction of nectar plants, however these would be localized reductions because not all of the burning treatments are expected to occur at the same time (less than 12% of the watershed) and abundant nectar habitat is available in brushy areas not proposed for treatment.

Implementation of alternative 2 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species** for the **Johnson's hairstreak butterfly** due to potential loss of individuals (primarily eggs, caterpillars or pupae) from cutting and burning activities. This loss is expected to be a small percentage of the population due to lack of optimal habitat in treatment units compared to habitat available in areas that will not be treated.

Pallid bat, Fringed myotis*Direct and indirect effects – DELSH, Riparian Restoration, Roadside FMZ, Pine-Oak / Rare Plant Restoration, Meadow Restoration and Strategic Ridgeline FMZ, Gaps, danger trees, noise, pile burning and underburning*

All treatments would retain large snags that may provide roost sites to the extent practicable, however incidental disturbance of individual bats and loss of snag roosts due to danger tree felling may occur during project activities. These activities would affect approximately 11 percent of the landscape compared to 16 percent under alternative 3.

Cumulative Effects

Danger tree felling for proposed project activities may be additive to danger tree felling that occurs for routine road maintenance or hazard tree felling in developed recreation sites. Slightly fewer danger trees would be expected under this alternative due to fewer areas accessed, however haul routes would be similar for both alternatives.

Implementation of alternative 2 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species** for the **pallid bat** or **fringed myotis** due to potential disturbance of individuals or loss of a small number of large snags from danger tree felling.

MIS Comparison of Alternatives

The **no action** alternative would not change the existing availability of habitat for any MIS species at the Forest level described earlier.

Table 14 displays the approximate amounts of MIS habitats affected by each action alternative. Though proposed treatments would affect habitat at the project level, neither alternative would considerably change available habitat for these species at the Forest scale. Proposed road closure and decommissioning would reduce human disturbance and restore habitat to some degree for the species that use habitat in those areas.

Table 14. MIS habitat affected by Alternatives 2 and 3.

Size & Canopy Cover	Successional Stage	Age (Years)	Alternative 2 Affected Acres (%)	Alternative 3 Affected Acres (%)	Forest Total Habitat Acres (% (2011))
	Road Surface		330	244	
Less than 9" DBH or less than 40% canopy cover	Cliffs, rock, balds, talus		50 (<0.1%)	45(<0.1%)	11,000 (1%)
	Serpentine (scattered trees)	0-200+	28 (<0.1%)	20 (<0.1%)	150,000 (14%)
	Grass/forb	0-3	1,054 (0.3%)	739 (0.2%)	380,320 (35%)
	Low shrub	4-10			
	Tall shrub	11-20			
	Pole/sapling	21-40			
	Hardwoods – small	< 40			
9" – 20" DBH & 40%+ canopy cover	Hardwoods - >9" & 40% canopy cover	41-100	1,810 (1%)	1,022 (0.5%)	181,283 (17%)
	Young including hardwoods meeting DBH & canopy closure	41-100			
21" – 31" DBH & 40%+ canopy cover	Mature	101-200	700 (<0.1%)	343 (<0.1%)	368,427 (34%)
32" + DBH & 40%+ canopy cover	Old growth	200+			

Implementation of alternative 2 or 3 would not affect habitat associated with large creeks or rivers identified for management by the Siskiyou LRMP for **bald eagles** or **osprey**.

Each action alternative is designed to increase and protect old-growth forest conditions in the watershed which would benefit old-growth dependent species such as the **northern spotted owl**. Alternative 2 would treat and maintain approximately 440 more acres in the DELSH, riparian restoration, and roadside FMZ treatments than alternative 3 as shown in Table 2. As discussed previously, treatments are not proposed in high value NRF habitat for northern spotted owls which includes old growth. However treatments are proposed in stands that are not currently high value NRF but have potential to support high value NRF based on abiotic features of the landscape. All treatments would retain legacy (old growth) trees. Habitat trends at the Forest level indicate a 6 percent decline in old growth habitat from 1989 to 2011 mostly due to wildland fire. Implementation of either alternative would not reduce the amount of mature and old growth habitat with 40% or canopy cover available at the Forest Level. Alternative 2 would result in more acres shifting from denser canopy cover to 40% canopy cover on ridgeline FMZs than alternative 3, however each alternative would affect less than 0.1% of this habitat on the Siskiyou National Forest and would continue supporting viability of the spotted owl at the forest level.

The **pileated woodpecker** and **American marten** represent mature forest habitat per the Siskiyou NF LRMP which also has declined at the forest level largely due to fire. Both alternatives are designed to promote mature forest development and resilience in the watershed, with more acres treated under alternative 2. Proposed treatments will retain legacy trees and maintain canopy cover above 40 percent where it exists. Treatments under both action alternatives are expected to increase availability of large snags and down wood over time, and support continued viability of pileated woodpeckers and American martens at the Forest level.

The **woodpeckers** include acorn, pileated, downy, hairy, and white-headed woodpeckers, as well

as northern flickers and red-breasted sapsuckers. These species are generally associated with oak woodland, mixed forest, and/or grassland habitat types and represent snag habitat per the Siskiyou LRMP. Currently there is far more snag habitat available on the Forest for woodpeckers than was planned for in the original LRMP. It is very likely that the forest is providing habitat for far more woodpecker pairs than originally thought to be needed across the Forest to provide for long term viability for this species (USDA Forest Service 2012). As described earlier in this report, the watershed has slightly higher availability of large snags at high densities than reference conditions. Though some incidental loss of snags may occur for danger tree mitigation (more so under alternative 2 due to more miles of road utilized), both action alternatives are designed to maintain and increase availability of large snags over time and provide opportunities to create snags where there are snag deficiencies (with more opportunity under alternative 2 due to more acres of treatment). For example, there are situations where it is desirable to remove Douglas-fir entwined in the canopy of an oak without damaging the oak, so girdling the fir removes the competition for the oak and creates a snag. In conclusion, continued viability of woodpeckers is expected at the Forest level with implementation of either action alternative.

Black-tailed deer and Roosevelt elk use all successional stages to meet their habitat needs for cover, forage and reproduction. Natural or created openings provide the majority of foraging habitat, which is assumed to be the most restrictive habitat component in this region (Forest Plan FEIS, III-106-107). Forage habitat is available within existing meadows, harvest units and burned areas less than 10 years old, and open canopy forested areas. Deer are frequently seen in the project area and elk or elk sign are occasionally seen. ODFW Roosevelt elk population survey data estimate a slight population increase in the Chetco unit since 2011.

Oregon Department of Fish and Wildlife has suggested a population objective of 32,600 deer for the Siskiyou National Forest. Forest Service and ODFW estimates of habitat capability vary however, both methods resulted in a proposed cover/forage ratio of 80:20 for the Siskiyou National Forest. Prior to implementation of the NWFP, regeneration harvests provided high-quality forage areas for big-game adjacent to both thermal and optimal thermal stands. Natural succession allowed for the forb and shrub layers to propagate at high-densities throughout the harvest unit for a period of 5-10 years or more until seedlings over-topped and shaded out the forage species. Currently, silvicultural prescriptions in young commercial stands typically reduce the canopy cover to near 40%, which maintains dispersal habitat for spotted owls. Reducing canopy cover to near 40% provides openings and allows sunlight to reach the forest floor which can stimulate growth of herbaceous and shrub layers. This can provide a short-term (5-10 year) increase in the forage base for both elk and deer until canopy of the remaining trees once again shade out the understory growth. The same prescription reduces thermal cover for big-game if the stand was at $\geq 70\%$ canopy cover prior to harvest. It may also reduce hiding cover for a period of time until the shrub layer reaches 3-5 feet in height (USDA Forest Service 2012).

While fires have greatly contributed to an increased the amount of early seral habitat since the Siskiyou NF LRMP, most of that acreage in the 2002 Biscuit fire is closing in with brush and young trees. Most recent thinning activities in the Upper Briggs Creek watershed have occurred in young plantations. The Onion Mountain Fire and Oak Flat Fires have also provided some recent early seral habitat at the edges of the watershed. Both action alternatives include treatments that will result in short-term and long-term early seral or open canopy habitats compared to current conditions, primarily in areas proposed for meadow and pine-oak restoration and ridgeline FMZs. This would occur over roughly 1,000 more acres under alternative 2 than alternative 3 and would provide a small increase in foraging habitat for deer and elk. Future underburning would maintain the availability of forage in most of the treated units as well. Continued viability of black-tailed deer and Roosevelt elk is expected at the Forest level with implementation of either action alternative.

Migratory Birds

Effects to migratory birds are considered by habitat attributes similar to MIS species but at a finer

scale (Table 10). Effects to these attributes based on treatment types and mechanisms of effects are described below. There would be no effects to migratory birds under the no action alternative. Current habitat distribution would remain and natural processes such as vegetation encroachment and wildland fire would alter habitat over time.

All treatments have potential to disturb active bird nests during the breeding season which could cause failed reproduction or mortality of young, though seasonal restrictions for spotted owls would also provide protection for other nesting birds. To the extent possible, any active bird nests encountered during project activities would be given a no-treat buffer adequate to avoid a stress response (eg. flushing an adult from incubating eggs or nestlings, avoid feeding young, or defensive behavior) or mortality until young have fledged. Otherwise, adult birds and fledglings would likely avoid an area during activities until disturbances such as noise and smoke end. For all treatments, noise and smoke disturbance may cause short-term avoidance outside of habitat which may be cumulative with any concurrent treatment of adjacent plantations resulting in a larger area avoided. Proposed road closure and decommissioning would locally reduce impacts of human disturbance and benefit birds that use those areas.

Proposed treatments that reduce dense brush and understory vegetation may displace species that prefer this habitat. This may occur in up to 16 percent of the watershed under alternative 2 and 11 percent under alternative 3. These effects would be short-term in treatments such as DELSH and riparian restoration, but may be more frequent or long-term in treatments such as roadside and ridgeline FMZs, and pine-oak and rare plant restoration where occasional underburning may prevent development of dense understories. Nonetheless, a large proportion of the watershed (over 80 percent) would remain untreated and continue to provide this type of habitat.

DELSH

Species such as the pileated woodpecker, brown creeper, Pacific-slope flycatcher, varied thrush, northern goshawk, chestnut-backed chickadee, and pine-siskin would benefit from treatments that favor development of large trees and snags, large hardwoods and multiple-canopy layers that include conifer and hardwood components. Furthermore, species that used shrub understories and forest floor complexity such as winter wren, hermit thrush, varied thrush, Nashville warbler, and Wilson's warbler. Direct effects include disturbance of occupied from noise, smoke and removal of habitat components from vegetation removal. This treatment is proposed within 4 percent of the watershed under alternative 2 and within 2 percent of the watershed under alternative 3.

Riparian and Meadow Restoration

Riparian habitat diversity benefits a variety of wildlife and birds. Proposed riparian treatments would increase plant species diversity by reducing ingrowth of Douglas-fir and increasing sunlight for hardwoods, shrubs, and other riparian vegetation. Treatments would also enhance growth of remaining trees similar to DELSH treatments. Species such as evening grosbeak, Allen's hummingbird, willow flycatcher, and various warblers and thrushes would benefit from riparian treatments. Meadow restoration would benefit species that use open grassy habitats, forest edge, and areas of open dense shrubs such as mountain quail, fox sparrow, evening grosbeak, and willow flycatcher. These treatments would affect less than 2 percent of the watershed under both alternatives, and roughly 7 percent of riparian and meadow habitat in the watershed under alternative 2 and 5 percent under alternative 3.

Roadside FMZ

These treatments would occur in a diverse range of habitats along roads including mature and young forest, open and closed canopies and brushy areas. Effects would be mixed for a variety of bird species. Species preferring open understories or areas with young shrub and herbaceous vegetation, forest edge and mixed conifer-deciduous habitat would likely benefit the most due to the reduction of ladder fuels and Douglas-fir ingrowth. Species include western tanager, sooty grouse, Hammond's flycatcher, various warblers, hummingbirds and pine siskin. These treatments may reduce habitat for species that prefer more dense brush and understory vegetation in up to 3 percent of the watershed.

Pine-Oak - Rare Plants

Pure pine-oak habitat featuring black or white oak is not common in the watershed, often it is mixed with Douglas-fir and canyon live oak. Treatments proposed that would retain and restore pine-oak habitat and certain rare plants that require full sunlight would benefit species such as purple finch, hermit thrush, evening grosbeak, quail, grouse, and various warblers, hummingbirds and woodpeckers. These treatments would enhance production of mast (acorns), pollen and nectar and retain large pine and hardwoods that provide cavities for cavity nesting birds. These treatments would occur in less than 4 percent of the watershed under alternative 2 and less than 3 percent under alternative 3.

Ridgeline FMZ

These treatments are designed to enhance open canopy legacy pine and Douglas-fir stands while reducing ladder fuels and crown connectivity to lower fire intensity and allow opportunities to manage fire spread. Species that prefer open mature or young forest habitats would benefit from these treatments such as the white-headed woodpecker and flammulated owl (Lehmkuhl, et al. 2007). With retention of large legacy trees and interspersed riparian zones, these ridgeline FMZs would provide forest edge and a mosaic of cover and openings for species such as certain flycatchers, quail, western tanager and woodpeckers. These treatments are proposed within 4 percent of the watershed under alternative 2 and 2 percent under alternative 3.

Pollinators

There would be no effects to pollinators with the no action alternative. Existing habitat would remain undisturbed except for natural processes such as vegetation encroachment and wildland fire which would alter the availability and distribution of pollen and nectar sources.

All proposed treatments under both action alternatives could result in short-term loss of nectar and pollen due to ground and vegetation disturbance (eg. brush cutting, burning) and long-term increases in nectar and pollen production with increased sunlight, reduced competition, and in some cases, rejuvenation from thinning and burning activities. Control and eradication of invasive plants and restoration of native plants would also benefit pollinators that require certain host plants and sources of pollen or nectar throughout the growing season. These activities would occur for each alternative, with alternative 2 involving more acres than alternative 3 (16 percent vs 11 percent of the watershed). Proposed road decommissioning under both alternatives would also provide opportunities to establish native plants that benefit pollinators on roadbeds.

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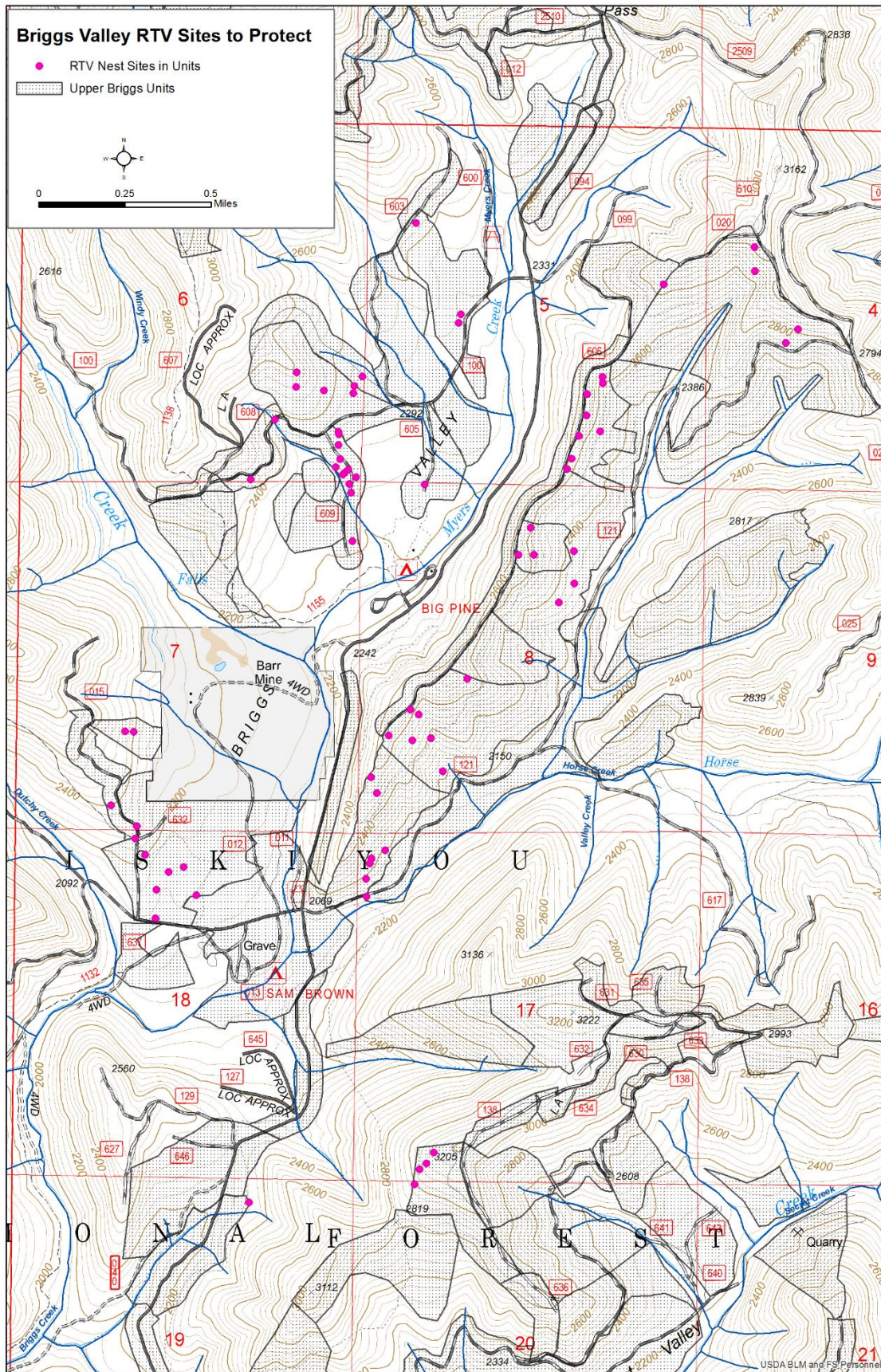
Appendix A – Mitigation measures and project design criteria

Species	Wildlife Design and Mitigation Measure	Objective	Where Applicable
NSO	Treatment timing of any commercial thinning for certain units are to be staggered over at least two years to minimize effects to prey base for particular known NSO sites, see project biological opinion for more details.	Minimize adverse impacts to federally listed species (spotted owls).	Units: 8, 9, 12, 12A, 262, 504, 505, 3, 3S, 14, 15, 16, 23B, 23C, 31 31A, 31B, 63, 64, 69, 70, 80, 101
NSO	Unit specific treatments for units 101 (entire) and 31B between Secret Creek and road 2500643 – underburn only, minimize ignition, hand thinning may occur to reduce ladder fuels where needed to prevent crown fire. No construction of landings or temp roads in these areas.	Minimize adverse impacts to federally listed species (spotted owls).	Units 101 and 31B
NSO	Nest patches (70 acres) –commercial thinning or temporary road or landing construction will not occur within any NSO nest patches.	Minimize adverse impacts to federally listed species (spotted owls).	All treatment units.
NSO	High Quality NRF (RA32) – no treatment activities will occur in patches identified as high-quality NRF per recovery plan RA32 implementation guidance.	Maintain habitat for federally listed species (spotted owl dispersal habitat).	
NSO	Gaps - Created forest openings will be 3/4 acre or smaller. Gap acreage will not exceed 20% of the unit area inclusive of landings, roads, yarding corridors and other operational openings.	Maintain habitat for federally listed species (spotted owl dispersal habitat).	All treatment units.
NSO	Noise above ambient (chain saws, felling, yarding, road construction, heavy equipment) within disturbance distances - Work activities (tree felling, yarding, road construction, etc.) that produce loud noises above ambient levels will not occur within restricted distances of any spotted owl nest site or unsurveyed NRF habitat between 1 March and 30 June (or until two weeks after the fledging period) – unless protocol surveys have determined the nest site or habitat not occupied, non-nesting, or failed in nesting attempt. Buffer distance for chain saws is 65 yards; for heavy equipment is 35 yards).	Minimize adverse impacts to federally listed species (spotted owls).	All project activities within disturbance distances of NRF habitat.
NSO	Helicopter or blasting operations - Follow the project design criteria in the relevant biological assessment.	Minimize adverse impacts to federally listed species (NSO).	Area of disturbance.
NSO	Hauling on roads not generally used by the public (usually ML 1 & 2) and within 65 yards of an owl nest site or unsurveyed NRF habitat– is restricted from 1 March through 30 June (or as determined by a wildlife biologist).	Minimize adverse impacts to federally listed species (spotted owls).	Haul on ML 1 & 2 roads (typically) and within 65 yards of an owl nest site.
NSO	Danger trees along roads - Limit number of trees to be felled within spotted owl habitat (NRF or dispersal) to no more than 10 trees per road mile. Limit number of trees to be felled within owl nest patch to no more than 5 trees per known nest site.	Maintain habitat for federally listed species (spotted owl)	Haul routes

Wild Rivers Ranger District, Rogue River-Siskiyou National Forest

NSO	Burning will not take place within 1/4 mile of a spotted owl site or unsurveyed NRF habitat between 1 March and 30 June (or until two weeks after the fledging period) unless substantial smoke will not drift into the NRF habitat or protocol surveys have determined the habitat is not occupied, or a known site is non-nesting, or failed in their nesting attempt.	Minimize adverse impacts to federally listed species (spotted owls).	All treatment areas.
RTV	Red tree vole nest trees outside of high priority sites - Do not cut known nest trees (see map next page) and retain canopy connectivity to adjacent trees.	Minimize adverse impacts to red tree voles.	Units 2,3,4,6,9,10,15,16, 23b,48, 253,504,505,508 652
Early seral	Seed landings, decommissioned roads, meadows and other openings with appropriate native grasses, forbs and shrubs to benefit pollinators, ungulates and other early-seral species.	Provide for species dependent on grasses and flowering/fruit producing plants; such as, butterflies, bees, some birds and mammals, ungulates etc.	All treatment areas.
Misc.	Damaged, cull or defective trees - Do not fell or remove. Leave for wildlife tree and snag recruitment.	Provide for species reliant on decadent trees or snags; such as, owls, fisher, bats and woodpeckers.	All treatment areas.
Misc.	Existing dead wood; standing and down - Avoid and protect existing snags and down wood ≥10 inches dbh to the greatest extent possible. Use treatment skips to avoid large dead wood (>20 inches dbh) or areas of accumulated dead wood.	Preserve existing dead wood to provide for species reliant on it; such as, owls, fisher, bats, woodpeckers, etc.	All treatment areas, especially DELSH and pine oak restoration
Misc.	Create hard snags and large down wood - in units where snags are deficient (< 4 snags per acre) and where it is desirable to eliminate trees >10" dbh, (eg. girdle a Douglas fir to favor a black oak) Distribute as singles and clumps, across all treatment types. Leave snags cut as operational danger trees for down wood.	Provide hard, dead wood until the stand resumes producing dead wood through natural processes. Provide for species reliant on snags and large down wood; such as, owls, flying squirrels, fisher, bats, woodpeckers, cavity nesting birds, etc.	All treatment areas, especially DELSH, pine oak and meadow restoration
Misc.	Incidental sightings of sensitive species - Follow the design criteria and mitigation measures in relevant wildlife consultation documents, recovery documents, management plans or Forest Service policy.	Minimize adverse impacts to at-risk species.	All treatment areas.
Misc.	Legacy trees – greater than 120 years in age based on tree characteristics described in project marking guidelines would be retained in all treatment units.	Maintain legacy trees for heterogeneity, future large dead wood and benefit multiple species.	All treatment areas.
Misc.	Retention of large hardwoods – will be implemented per marking guidelines for all treatment units.	Maintain habitat diversity and benefit multiple species.	All treatment areas.
Misc.	Untreated buffers of active bird nests encountered during project activities would be large enough to avoid soliciting a stress response that causes an adult to flush from incubating eggs or nestlings, avoid feeding young or exhibit defensive behavior until young have fledged.	Minimize adverse impacts to breeding migratory birds.	All treatment areas.

Appendix A Map 1. RTV known nest trees to protect. Coordinates available from wildlife biologist.



Appendix B – Policy

Forest Service Policy

Forest Service Manual 2600, section 2672.4, guides development of a biological evaluation to determine possible effects to endangered, threatened, proposed or sensitive species. The primary objective of this evaluation is to document that the proposed activities would not contribute to a loss of viability of native species or a trend towards federal listing. FSM 2672.43 provides a description of the administrative and field procedures associated with the preparation of a BE. Habitat examination direction is included in FSM 2634. All documents are available at http://www.fs.fed.us/im/directives/dughtml/fsm_2000.html.

ESA Policy

The Endangered Species Act, section 7(a)(2), requires federal agencies to consult with the U.S. Fish and Wildlife Service to ensure proposed actions do not jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitats. In addition, section 7(a)(1) specifies our obligation to conserve listed species, including measures necessary to recover the species and remove them from the ESA list.

If a Federal action *may affect* a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with the U.S. Fish and Wildlife Service. The resulting consultation document usually contains project design criteria or other conservation measures which are mandatory.

Region 6 Sensitive Species Policy

A full description of the Interagency Special Status/Sensitive Species Program (ISSSSP), agency direction, species lists and criteria for inclusion, conservation planning tools and species fact sheets are available at: <http://www.fs.fed.us/r6/sfpnw/issssp/>.

Sensitive species are species for which there is a documented concern for viability within one or more administrative unit within the species' historic range (FSM 2670.22, WO Amendment 2600-95-7). These species may require special management emphasis to ensure their viability and to preclude trends toward endangerment that would result in the need for Federal listing.

The Siskiyou LRMP requires the maintained viability of special status species. Protection includes managing habitat to minimize impacts, as well as prohibition of noise disturbance during the breeding season.

Northwest Forest Plan Policy (Survey and Manage Species)

Additional information on the Northwest Forest Plan, including documents for download, is available on the internet at: <http://www.reo.gov/general/aboutNWFP.htm>. Survey and manage policy is available at: <http://www.blm.gov/or/plans/surveyandmanage/>.

Federal lands within the range of the northern spotted owl and Oregon red tree vole are subject to the provisions in the Northwest Forest Plan including survey and management standards and guidelines. The NWFP amends the 1989 Siskiyou National Forest Land and Resource Management Plan.

Survey and Manage

On December 2009, the District Court for the Western District of Washington issued an order on partial summary judgment in favor of the Plaintiffs finding inadequacies in the NEPA analysis supporting the *Record of Decision to Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans Within the Range of the Northern Spotted Owl* (FS et al. 2007)(2007 ROD). The District Court did not issue a remedy or injunction at that time.

Plaintiffs and Defendants entered into settlement negotiations that resulted in the 2011 Survey and Manage Consent Decree, adopted by the District Court on July 6, 2011.

The Defendant-Intervenor subsequently appealed the 2011 Consent Decree to the Ninth Circuit Court of Appeals. The April 25, 2013 ruling in favor of Defendant-Intervener remanded the case back to the District Court.

On February 18, 2014, the District Court vacated the 2007 RODs. Vacatur of the 2007 RODs has the result of returning the Forest Service to the status quo in existence prior to the 2007 RODs.

The District Court and all parties agreed that projects begun in reliance on the Settlement Agreement should not be halted. The District Court order allowed for the Forest Service and BLM to continue developing and implementing projects that met the 2011 Settlement Agreement exemptions or species list, for three categories of projects. These categories include:

- 1) Projects in which any survey and manage pre-disturbance survey(s) has been initiated (defined as at least one occurrence of actual in-the-field surveying undertaken according to applicable protocol) in reliance upon the Settlement Agreement on or before April 25, 2013;
- 2) Projects, at any stage of project planning, in which any known site(s) (as defined by the 2001 Record of Decision) has been identified and has had known site-management recommendations for that particular species applied to the project in reliance upon the Settlement Agreement on or before April 25, 2013; and
- 3) Projects, at any stage of project planning, that the Agencies designed to be consistent with one or more of the new exemptions contained in the Settlement Agreement on or before April 25, 2013.

Siskiyou NF LRMP Direction

Following are standards and guidelines pertaining to wildlife habitat management from the Siskiyou NF LRMP (USDA 1989) applied to the Upper Briggs Restoration Project:

Special Wildlife Site

Horse Creek Meadow and the meadow at Sam Brown Campground are identified in the LRMP as a special wildlife site, and more specifically as a General Wildlife Site (p IV-114). Ten separate units in the Project Proposed Action overlap this wildlife site with treatments proposed to benefit pine-oak habitat, late successional habitat, meadow and riparian habitats that make up this site.

Special Wildlife Site Management Direction (p IV-115 to IV-119):

MA-9-7 Meadows and meadow buffers: “The following activities are important in maintaining optimum meadow habitat for wildlife:

1. Encroaching trees from surrounding forest and other undesirable vegetation should be removed from meadows.
2. Large, live trees within meadow areas may be left as is or girdled, depending on individual circumstances. Dead trees (standing or down) should not be removed.
3. Meadow areas lost to encroachment may be restored to their former size. The Forests’ oldest aerial photographs (circa 1940) should be used as reference points in reestablishing the historical boundaries.”

MA9-14 General Wildlife Sites: “These sites have multiple values for wildlife (such as wet area/meadow/shrub complex) and add substantially to the mix of wildlife habitats on the Siskiyou. These areas should be managed to maintain or improve their value to wildlife.”

MA9-18 Timber: “Timber harvest may be permitted, if it is shown to be beneficial to specific wildlife or plant species that the habitat is designated for, and is shown by environmental analysis to best meet the goals of the management area.”

MA9-21 “A forested 200-foot-wide band (two sight-distance for deer/elk hiding cover) should be maintained around each meadow...defined as follows:

1. The meadow edge vegetation (50ft) should generally not be disturbed (vertical habitat diversity is greatest here). Vegetation in the meadow edge may be manipulated, if beneficial to wildlife. For example, when manipulation of vegetation would help restore meadow areas already lost to encroachment; trees which must be killed should be girdled and left standing unless realization of meadow management objectives would be hampered. In reclaimed portions of meadows, a new buffer zone will be established.
2. Ground cover, shrubs and understory trees should be encouraged in a band from 50-200 feet away from the meadow edges. If trees need to be killed in this zone, they shall not be removed unless necessary to meet meadow management objectives. Habitat capability for cavity-using wildlife should never be less than the 100 percent level. As a general guideline, until comprehensive management plans are developed for each district’s special wildlife and botanical sites, unprogrammed timber harvest activities should take place in no more than one-third of this buffer area in a 20-year period. (one-half the buffer if meadow is less than 10 acres)”

Furthermore, management recommendations for the project area provided in the Briggs Creek Watershed Analysis (1997) state (Overview p. 21-23):

The Briggs Valley Elk Management Plan (prepared in the 1980’s) and the forest Plan should be used as guidance to minimize conflicts between humans and wildlife in the Briggs Valley area. From reference conditions, grazers (e.g., elk) and other grassland-dependent species have likely decreased in abundance or disappeared from certain areas of the watershed completely. Removal of trees within meadows via a combination of harvest and prescribed burning could restore meadows and also increase the diversity and abundance of wildlife (grazers).

Due to the fact that fire suppression has been so successful in recent decades, many areas that were small meadows have now become brush fields or young forested areas. Removal of these trees via a combination of harvest and controlled burns could restore many of these acres and also increase the diversity and abundance of wildlife.

MIS

The National Forest Management Act of 1976 (NFMA) requires that each national forest identify management indicator species in the planning process and that "fish and wildlife habitats would be managed to maintain and improve habitat of selected management indicator species." By monitoring the habitat changes or trends of these particular indicator species, the effects of management activities on the associated animal communities can theoretically be determined.

Since the habitats of these indicator species cover the majority of the vegetative seral stages on the Forest, it is assumed that meeting the requirements of these species would assure that the needs of associated species would be met over time. (16 USC 1604 Sec. 6 g3b)

Management indicator species associated with the Siskiyou NF LRMP (USDA 1989) represent the issues, concerns, and opportunities to support recovery of federally-listed species, provide continued viability of sensitive species, and enhance management of wildlife and fish for commercial, recreational, scientific, subsistence, or aesthetic values or uses.

Management indicators representing overall objectives for wildlife, fish, and plants may include species, groups of species with similar habitat relationships, or habitats that are of high concern (FSM 2621.1).

Indicator species represent other wildlife species which utilize a similar habitat type. As such, MIS act as a barometer for the health of various habitats and would be monitored to quantify habitat changes predicted by implementation of the Siskiyou LRMP (1989 pages IV-10 and 11, FEIS page III-102).

Migratory Birds

The Migratory Bird Treaty Act of 1918 (MBTA) implements various treaties and conventions between the U.S., Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Under the act, it is unlawful to pursue, hunt, take, capture (or kill) a migratory bird except as permitted by regulation (16 U.S.C. 703-704). The regulations at 50 CFR 21.11 prohibit the take, possession, import, export, transport, sale, purchase, barter, or offering of these activities, or possessing migratory birds, including nests and eggs, except under a valid permit or as permitted in the implementing regulations (Director's Order No. 131). A migratory bird is any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle.

The U.S. Fish and Wildlife Service (FWS) is the lead federal agency for managing and conserving migratory birds in the United States; however, under Executive Order (EO) 13186 (below) all other federal agencies are charged with the conservation and protection of migratory birds and the habitats on which they depend. In response to this order, the BLM and Forest Service have implemented management guidelines that direct migratory birds to be addressed in the NEPA process when actions have the potential to negatively or positively affect migratory bird species of concern.

Executive Order (EO) 13186 (66 Fed. Reg. 3853, January 17, 2001) lists several responsibilities of federal agencies to protect migratory birds. It directs federal agencies to avoid or minimize the negative impact of their actions on migratory birds, and to take active steps to protect birds and their habitat. This Executive Order also requires federal agencies to develop memorandum of understandings (MOU) with the FWS to conserve birds including taking steps to restore and enhance habitat, prevent or abate pollution affecting birds, and incorporating migratory bird conservation into agency planning processes whenever possible.

A memorandum of understanding (MOU) between USDA Forest Service and USDI Fish and Wildlife Service was signed December, 2008, and extended for two years on June 20, 2014. The purpose of this MOU is, *“to strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and avoid or minimize adverse impacts on migratory birds through enhanced collaboration between the Parties, in coordination with State, Tribal, and local governments.”*

Pollinators

In June of 2014 a Presidential Memorandum was issued to create a federal strategy to promote the health of honey bees and other pollinators. It outlined new steps for reversing pollinator losses and restoring populations, including establishment of the pollinator health task force which was tasked with developing a national pollinator health strategy. Primary components of the strategy are research, education and development of public-private partnerships. Federal agencies were also tasked with enhancing pollinator habitat on their managed lands, consistent with their mission and public safety. Specific tasks include the development of best management practices for enhancing pollinator habitat and establishment of a pollinator-friendly native seed reserve.

Appendix C – Species reviewed

The following tables list all species which are documented or suspected of occurring on the Rogue River-Siskiyou National Forest which are: federally listed, FS Region 6 sensitive, NWFP survey and manage, MIS or covered under an executive order or memo of understanding.

Habitat descriptions and distribution were primarily summarized from the following sources. See these source documents for detailed descriptions of habitat, how the habitat is utilized and species' behaviors.

- Species fact sheets at the Interagency Sensitive and Special Status Species Program website at <http://www.fs.fed.us/r6/sfpnw/issssp/>.
- *Land Mammals of Oregon* (Verts and Carraway 1998)
- *The Butterflies of Cascadia* (Pyle, Robert. 2002. Seattle Audubon Society, Seattle, WA)
- *Amphibians & Reptiles of the Pacific Northwest* (Nussbaum and others 1983; Storm and others 1983)
- *Birds of Oregon* (Marshall, D.B., M.G. Hunter, and A.L. Contreras, Eds. 2003. Birds of Oregon: a general reference, Oregon State University Press, Corvallis, OR. 768 pp.)
- *Bumble Bees of the Western United States*. (Koch, J., J. Strange, and P. Williams et al. 2012. Bumble bees of the western United States. USDA Forest Service.)
http://www.fs.fed.us/wildflowers/pollinators/documents/Bumble_beeGuide2011.pdf
- *Birding Checklist for Josephine County, Oregon* (East Cascades Audubon Society Bend, OR) <http://www.eaudubon.org/county-checklists>

Table 15. Federally listed terrestrial wildlife species likely on Rogue River-Siskiyou National Forest and known range overlap with Wild Rivers Ranger District.

Common Name	Scientific Name	Primary Habitat	WRRD Within Known Range?
Marbled murrelet (threatened)	<i>Brachyramphus marmoratus</i>	Old-growth w/in 50 miles of ocean	Yes
Northern spotted owl (threatened)	<i>Strix occidentalis caurina</i>	Mature, complex forest with adequate large dead wood	Yes
Gray wolf (threatened)	<i>Canis lupus</i>	Forested areas with sufficient prey.	No
Pacific fisher (proposed)	<i>Pekania pennantia</i>	Dense, continuous-canopy conifer forests at low to mid-elevations. Denning is in large snags & trees with dead tops.	Yes

Table 16. Forest Service regionally sensitive terrestrial wildlife species likely on Rogue River-Siskiyou National Forest and known range overlap with Wild Rivers Ranger District.

Common Name	Scientific Name	Primary Habitat	WRRD Within Known Range?
American peregrine falcon	<i>Falco peregrinus anatum</i>	Cliffs > 75 ft in height	Yes
Bald eagle	<i>Haliaeetus leucocephalus</i>	Forest near large bodies of water.	Yes
Harlequin duck	<i>Histrionicus histrionicus</i>	Low to moderate gradient streams.	Yes
Lewis's woodpecker	<i>Melanerpes lewis</i>	Open woodland near water.	Yes
Northern waterthrush	<i>Parkesia noveboracensis</i>	Bogs, wet areas	Potentially
Purple martin	<i>Progne subis</i>	Snags in open habitats	Yes
Tricolored blackbird	<i>Agelaius tricolor</i>	Wet marsh with bulrush, cattail, nettles, willows and blackberries.	Yes
White-headed woodpecker	<i>Picoides albolarvatus</i>	Dry conifer forest with Ponderosa Pine	Yes

Upper Briggs Restoration Project – Wildlife Report and BE – December, 2018

White-tailed kite	<i>Elanus leucurus</i>	Prairie, agricultural fields	Yes
Black salamander	<i>Aneides flavipunctatus</i>	Applegate Watershed, Jackson Co.	No
Foothill yellow-legged frog	<i>Rana boylei</i>	Permanent streams usually with rocky, gravelly, or sandy bottoms.	Yes
Siskiyou mountains salamander	<i>Plethodon stormi</i>	Siskiyou Mountains Jackson Co.	No
Western pond turtle	<i>Actinemys marmorata</i>	Permanent streams usually with rocky, gravelly, or sandy bottoms.	Yes
Green sideband	<i>Monadenia fidelis flava</i>	Moist, relatively undisturbed forest, west slope of coast range	No
Modoc Rim sideband	<i>Monadenia fidelis ssp. nov. (Modoc Rim)</i>		No
Oregon shoulderband	<i>Helminthoglypta hertleini</i>	Moist, rocky areas, woody debris, hardwood leaf litter; Jackson, Josephine, Douglas Co.	Yes
Siskiyou hesperian	<i>Vespericola sierranus</i>	Klamath, Jackson, Douglas Co.	No
Travelling sideband	<i>Monadenia fidelis celeuthia</i>	Low elevation rocky areas with oak and maple overstory. Jackson and Josephine Co.	Yes
Franklin's bumble bee	<i>Bombus franklini</i>	Douglas, Jackson, and Josephine counties in Oregon; open habitat with native flowering plants	Yes
Western bumble bee	<i>Bombus occidentalis</i>	Open, unmown habitat with native flowering plants.	Yes
Coastal greenish blue butterfly	<i>Plebejus saepiolus littoralis</i>	Coastal bogs & wet meadows.	No
Coronis fritillary	<i>Speyeria coronis coronis</i>	Serpentine (in Siskiyou).	Yes
Gray-blue butterfly	<i>Plebejus podarce klamathensis</i>	High elevation wet montane meadows with shooting star larval food plant; Jackson, Josephine, Douglas, Klamath Co.	Yes
Johnson's hairstreak	<i>Callophrys johnsoni</i>	Mature conifer forest with dwarf mistletoe growth.	Yes
Mardon skipper	<i>Polites mardon</i>	Serpentine meadows with native bunch grasses.	Yes
Siskiyou short-horned grasshopper	<i>Chloealtis aspasma</i>	Grassland, herbaceous habitats with elderberry; Jackson Co. Siskiyou Mountains	No
Fringed myotis	<i>Myotis thysanodes</i>	Caves, adits	Yes
Pallid bat	<i>Antrozous pallidus</i>	Brushy & rocky terrain often. Crevices in caves, shafts, buildings, rock piles, trees, etc. Most abundant in xeric areas.	Yes
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Caves, adits	Yes
Pacific marten	<i>Martes caurina</i>	Dense brush for cover	Yes
Sierra Nevada red fox	<i>Vulpes vulpes necator</i>	Southern OR Cascades	No
Wolverine	<i>Gulo gulo</i>	Subalpine, alpine, lodgepole, & red fir forests.	Yes

Table 17. Northwest Forest Plan terrestrial wildlife species included in survey and manage standards and guidelines (Dec. 2003, but with Jan. 2001 ROD category assignment for red tree vole).

Common and Scientific Name	Category	Status On RRSNF	WRRD Within Known Range?
Larch Mountain salamander <i>Plethodon larselli</i>	A	Out of range	No
Shasta salamander <i>Hydromantes shastae</i>	A	Out of range	No
Siskiyou Mountains salamander <i>Plethodon stormi</i> , north range	D ¹	Documented	No
Siskiyou Mountains salamander <i>Plethodon stormi</i> , south range	A	Out of range	No
Van Dyke's salamander <i>Plethodon vandykei</i> , Cascade popn. only	A	Out of range	No
Great gray owl <i>Strix nebulosa</i>	A	Documented	Yes
Oregon red tree vole <i>Arborimus longicaudus</i>	C	Documented	Yes
<i>Cryptomastix devia</i>	A	Out of range	No
<i>Cryptomastix hendersoni</i>	A	Out of range	No
<i>Deroceras hesperium</i> (Evening fieldslug)	B ³	Suspected	No
<i>Helminthoglypta talmadgei</i>	D ¹	Out of range	No
<i>Hemphillia burringtoni</i>	E	Out of range	No
<i>Hemphillia glandulosa</i> , In WA Western Cascades	E	Out of range	No
<i>Hemphillia malonei</i> , Washington	C	Out of range	No
<i>Hemphillia pantherina</i>	B ³	Out of range	No
<i>Monadenia chaceana</i> (Chace sideband)	B ³	Documented	Yes
<i>Monadenia fidelis minor</i>	A	Out of range	No
<i>Monadenia troglodytes troglodytes</i>	A	Out of range	No
<i>Monadenia troglodytes wintu</i>	A	Out of range	No
<i>Oreohelix</i> n. sp.	A	Out of range	No
<i>Pristiloma arcticum crateris</i> (Crater Lake tightcoil)	A ²	Documented	No
<i>Prophysaon coeruleum</i> (Blue-gray taildropper), In CA & WA	A	Documented	No
<i>Trilobopsis roperi</i>	A	Out of range	No
<i>Trilobopsis tehamana</i>	A	Out of range	No
<i>Vertigo</i> n. sp.	A	Out of range	No
<i>Vespericola pressleyi</i>	A	Out of range	No
<i>Vespericola shasta</i>	A	Out of range	No
Special consideration species			
<i>Monadenia infumata ochromphalis</i>	B	Out of range	No
<i>Ancotrema voyanum</i>	E	Out of range	No
Oregon megomphix (<i>Megomphix hemphilli</i>), north.	A	Out of range	No
Oregon megomphix (<i>Megomphix hemphilli</i>), south.	F	Documented	No

Surveys and Site Management to Consider Based on Category: **Category A** – conduct pre-disturbance surveys and manage all known sites; **Category B** – for the fungi & lichens, conduct equivalent-effort surveys in old-growth forest only and manage all known sites; for mollusk conduct surveys in all suitable habitats and manage all known sites; **Category C** – conduct pre-disturbance surveys and manage high-priority sites; **Category D** – manage high-priority sites; **Category E** – manage all known sites; **Category F** – no requirement for project implementation; strategic surveys address information needs in relation to basic criteria for S&M; strategic surveys are the responsibility of the Regional Office and not field units.

¹ Although pre-disturbance surveys are deemed practical for these species, continuing pre-disturbance surveys is not necessary in order to meet management objectives.

² For these species, until management recommendations are written, the following language will be considered part of the management recommendation: Known and newly discovered sites of these species will be protected from grazing by all practical steps to ensure that the local population of the species will not be impacted.

³ Based upon direction contained in the ROD, equivalent-effort pre-disturbance surveys are required for these mollusk species.

Appendix D – Northern spotted owl details

Description and Range - A full description of northern spotted owl identification, range, habitat and life history can be found in the final rule designation critical habitat at:

<http://www.gpo.gov/fdsys/pkg/FR-2012-12-04/pdf/2012-28714.pdf>.

Legal status – Northern spotted owls were listed as threatened on June 26, 1990, due to widespread loss and adverse modification of suitable habitat across the owl's entire range and the inadequacy of existing regulatory mechanisms to conserve the owl (USDI Fish and Wildlife Service 1990).

Critical habitat for the northern spotted owl was revised and became effective January 3, 2013 (USDI Fish and Wildlife Service 2012a). All private and the majority of State lands were excluded from the final rule; the designation focused on federal lands which contained habitat attributes essential to the spotted owl's recovery.

Northern spotted owl viability and population trends - For a detailed analysis of monitoring data for owl habitat, see the draft Northwest Forest Plan 20-year report (1994-2013) for northern spotted owls: <http://www.reo.gov/monitoring/reports/20yr-report/>. The most recent range-wide meta-analysis for data through 2013 showed a range-wide, spotted owl population decline of 3.8 percent annually and an overall decline in occupancy rates in Oregon (Katie M. Dugger et al. 2016). Owl occupancy rates in Oregon are down from 22 to 47 percent. Dugger et al. indicates that barred owl presence is having a strong positive effect on overall NSO extinction rates and a strong negative effect on colonization rates in some areas. Additionally, habitat loss is still a concern and has strong effects on survival, extinction and colonization rates in some areas.

Owl suitable habitat

Current management direction for the northern spotted owl has its basis in *A Conservation Strategy for the Northern Spotted Owl* (Thomas and others 1990). Thomas disclosed northern spotted owls use old-growth forests almost exclusively, and rarely use clear cuts or young forest plantations. When young stands are used, they typically contain remnant large trees (Thomas and others 1990). Where timber harvest has occurred, spotted owls are usually found in the remaining patches of old-growth and mature forest (Forsman and others 1982).

Features associated with forests used by spotted owls include multi-layered canopies, relatively high canopy closure, large diameter trees, and numerous snags and logs (Thomas and others 1990). These stand features are related to requirements for nesting, roosting and foraging (NRF) (Forsman and others 1982). Spotted owls most commonly nest in tree cavities or on platforms created by debris or mistletoe infections (Thomas and others 1990).

Dispersal-only habitat is forest with canopy closure more than 40 percent, average diameter greater than 11 inches, and flying space for owls in the understory, but without the nesting components found in nesting, roosting and foraging habitat.

Connectivity - To provide connectivity between habitats, the revised recovery plan for the spotted owl describes sufficient dispersal at a minimum as with a mean tree diameter at breast height of 11 inches and 40 percent canopy closure (USDI Fish and Wildlife Service 2011b).

Food habits and prey species - Primary prey species of spotted owls are small mammals that include northern flying squirrels (*Glaucomys sabrinus*), and dusky-footed woodrats (*Neotoma fuscipes*), and bushy-tailed woodrats (*N. cinerea*). They also prey on tree voles (*Arborimus* and *Clethrionomys*), mice (*Peromyscus* spp.), and other small mammals (USDI Fish and Wildlife Service 2011b).

Threats to owls - In the 2011 revised recovery plan for the spotted owl “experts identified past habitat loss, current habitat loss, and competition from barred owls as the most pressing threats to the spotted owl.” In addition, disease and the effect of climate change were identified as potential threats (USDI Fish and Wildlife Service 2011b).

Survey history – With the exception of habitat within the entire home ranges of NSO sites 50 and 59, suitable NRF habitat within the Upper Briggs Project area was surveyed to protocol (USDI Fish and Wildlife Service 2012) in 2014 and 2015. As a result, two new activity centers were confirmed that have past NSO observations in the Forest NRIS database but not documented as activity centers in the Forest NSO activity center database. These 2 sites do not have official activity center numbers yet and are referred to as “Sam Brown” and “Secret Creek”. In 2016 protocol surveys were conducted 3 times during the survey period but no responses were detected at all. Stand searches in 2016 where detections were made in 2014 and 2015 also resulted in no detections. Two historic sites (50 and 59) have a small portion of their home ranges that overlap treatment units which were covered in the surveys, however the entire home ranges were not surveyed for occupancy.

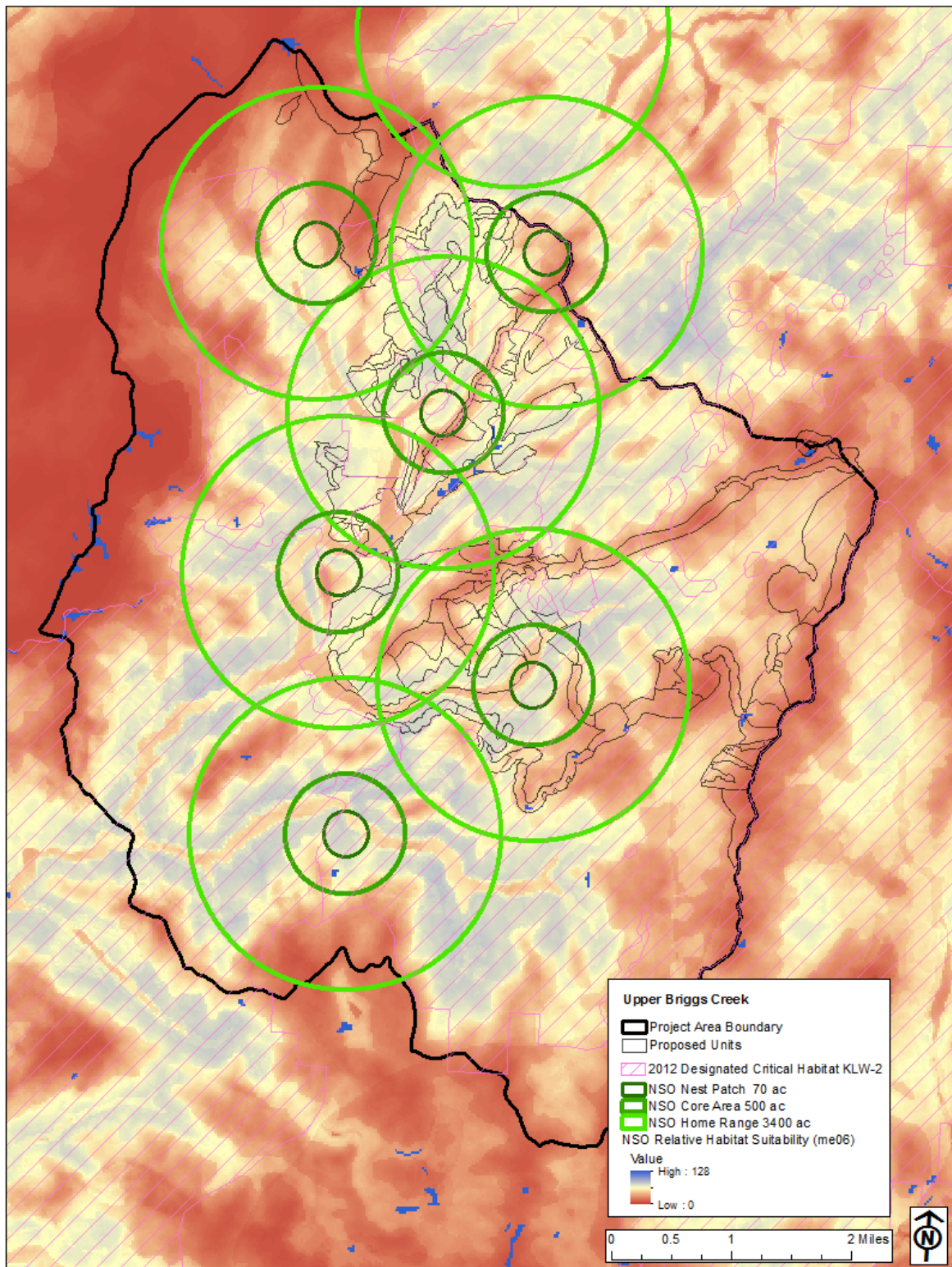
Reproduction was not confirmed at any of the owl sites during the 2014-2016 surveys. Sam Brown was the only site where an NSO pair was detected early in 2014, but only the male was found and moused on subsequent visits. Individual male NSO were detected at Secret Creek and Site 55. The Secret Creek male was moused once, and the male at Site 55 was never located during the daytime to mouse. These two sites also had barred owl detections the same years. Site 59 was surveyed once in 2016 resulting in detection of a pair of barred owls. No stand searches were conducted for Site 60 due to access difficulty and this site has no records of historic pair occupancy NRIS.

Designated Critical Habitat: Subunit 9-KLW-2

The 9-KLW-2 subunit occurs in Josephine, Curry and Coos Counties, Oregon, and comprises Federal lands managed by the USFS and BLM under the NWFP (USDA and USDI 1994, entire). This subunit is approximately 149,965 acres. Land ownership is approximately 53 percent USFS managed by the Wild Rivers Ranger District, 47 percent BLM, and less than 1 percent State Land. Approximately 69 percent of the federal lands are in LSR and 31 percent is matrix (based on pre-2016 BLM RMP). Of the matrix lands, 99 percent are managed by the Wild Rivers Ranger District.

Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support to the overall population and for north-south and east-west connectivity between subunits and critical habitat units. At the time of listing, approximately 71% of this subunit was covered by verified NSO home ranges.

Appendix D Map 1. Owl relative habitat suitability modeling in the Upper Briggs Watershed and NSO home ranges that overlap alternative 2 proposed treatments.



Appendix E – Migratory and focal birds

1. Bird conservation regions (BCR)

Bird conservation regions (BCRs) are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. BCRs are a hierarchical framework of nested ecological units delineated by the [Commission for Environmental Cooperation \(CEC\)](#). The CEC framework comprises a hierarchy of 4 levels of eco-regions. At each spatial level, spatial resolution increases and eco-regions encompass areas that are progressively more similar in their biotic (e.g., plant and wildlife) and abiotic (e.g., soils, drainage patterns, temperature, and annual precipitation) characteristics.

A mapping team comprised of members from United States, Mexico, and Canada assembled to develop a consistent spatial framework for bird conservation in North America. The team's US members met to apply the framework to the United States and developed a proposed map of BCRs. The map was presented to and approved by the US North American Bird Conservation Initiative (NABCI) Committee during its November 1999, meeting. The map is a dynamic tool. Its BCR boundaries will change over time as new scientific information becomes available. It is expected that the map will be updated every three years. More information on BCR's can be found at <http://www.nabci-us.org/bcrs.htm>.

The overall goal of these BCR lists are to accurately identify the migratory and resident bird species (beyond those already designated as federally threatened or endangered) that represent our highest conservation priorities.

BCR lists are updated every five years by the US Fish and Wildlife Service.

2. Birds of conservation concern (BCC)

In December, 2008, the U.S. Fish and Wildlife Service released *The Birds of Conservation Concern Report* (BCC) which identifies species, subspecies, and populations of migratory and resident birds not already designated as federally threatened or endangered that represent highest conservation priorities and are in need of additional conservation actions.

While the bird species included in *BCC 2008* are priorities for conservation action, this list makes no finding with regard to whether they warrant consideration for Endangered Species Act (ESA) listing. The goal is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions. It is recommended that these lists be consulted in accordance with Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds." In the BLM and FWS MOU, both parties shall: *Work collaboratively to identify and address issues that affect species of concern, such as migratory bird species listed in the Birds of Conservation Concern (BCC) and FWS's Focal Species initiative. (BLM and FWS MOU, 2012, Section VI, page 4).*

This report should also be used to develop research, monitoring, and management initiatives. *BCC 2008* is intended to stimulate coordinated and collaborative proactive conservation actions among Federal, State, Tribal, and private partners. The hope is that, by focusing attention on these highest-priority species, this report will promote greater study and protection of the habitats and ecological communities upon which these species depend, thereby contributing to healthy avian populations and communities.

This project is within BCR 5, northern Pacific forest U.S. The birds of conservation (BCC) species list for BCR 5 is in table 20.

Table 18. Birds of conservation concern for region 5 (northern Pacific forest, U.S. only).

BCC BIRD SPECIES	
Yellow-billed Loon (nb)	Marbled Godwit (nb)
Western Grebe (nb)	Red Knot (<i>roselaari</i> ssp.) (nb)
Laysan Albatross (nb)	Short-billed Dowitcher (nb)
Black-footed Albatross (nb)	Aleutian Tern
Pink-footed Shearwater (nb)	Caspian Tern
Red-faced Cormorant	Arctic Tern
Pelagic Cormorant (<i>pelagicus</i> ssp.)	Marbled Murrelet (c)
Bald Eagle (b)	Kittlitz's Murrelet (a)
Northern Goshawk (<i>laingi</i> ssp.)	Black Swift
Peregrine Falcon (b)	Rufous Hummingbird
Black Oystercatcher	Allen's Hummingbird
Solitary Sandpiper (nb)	Olive-sided Flycatcher
Lesser Yellowlegs (nb)	Willow Flycatcher (c)
Whimbrel (nb)	Horned Lark (<i>strigata</i> ssp.) (a)
Long-billed Curlew (nb)	Oregon Vesper Sparrow (<i>affinis</i> ssp.)
Hudsonian Godwit (nb)	Purple Finch

(a) ESA candidate, (b) ESA delisted, (c) non-listed subspecies or population of Tor E species, (d) MBTA protection uncertain or lacking, (nb) non-breeding in this BCR.

3. Avian Conservation Planning (Migratory and Resident Birds)

Migratory birds are those that breed in the U.S. and winter south of the border in Central and South America. Many of our well known passerine songbirds, flycatchers, vireos, swallows, thrushes, warblers, and hummingbirds, fall into this category. Most others are included in the resident category. Birds are a vital element of every terrestrial habitat in North America.

Conserving habitat for birds will therefore contribute to meeting the needs of other wildlife and entire ecosystems (Partners In Flight Continental Plan). Continent wide declines in population trends for many avian species has developed into an international concern and led to the creation of the North American Bird Conservation Initiative (NABCI). Under this initiative, plans have been developed for the conservation of waterbirds, shorebirds, seabirds and landbirds. The landbird initiative known as Partners-In-Flight (PIF) has developed a series of bird conservation plans for every state. PIF has gained wide recognition as a leader in the landbird conservation arena.

The Oregon and Washington Chapter of PIF was formed in 1992 and has since developed a series of publications aimed at assisting private, state, tribal and federal agencies in managing for landbird populations. The most recent and applicable publications for the two state area have been conservation plans for landbirds.

PIF bird conservation plans

Five conservation plans have been developed by PIF covering the various geographic regions found in Oregon and Washington. These documents have been prepared to stimulate and support a proactive approach to the conservation of landbirds throughout Oregon and Washington. They represent the collective efforts of multiple agencies and organizations within Oregon and Washington. Participants included biologists from federal and state agencies, industry, private

consulting firms, environmental organizations, and academia in order to ensure a full range of ideas and practicalities were addressed by the plans.

Recommendations included in the documents are intended to inform planning efforts and actions of land managers, and stimulate monitoring and research to support landbird conservation. The recommendations are also expected to serve as a foundation for developing detailed conservation strategies at multiple geographic scales to ensure functional ecosystems with healthy populations of landbirds.

The 2012 plan applicable to this project can be found on the OR-WA PIF web site: [Habitat Conservation for Landbirds in the Coniferous Forests of Western Oregon and Washington](#) v. 2.

The overall goal of PIF bird conservation planning is to ensure long-term maintenance of healthy populations of native landbirds. These documents are intended to facilitate that goal by identifying conditions and habitat attributes important to the landbird community, describing the desired landscape based on habitat relationships of a select group of species, providing interim management targets (i.e., biological objectives) to achieve desired conditions, and recommending management actions (i.e., conservation options) that can be implemented by various entities at multiple scales to achieve the biological objectives.

Implementation of parts or all of the strategy should help prevent reactionary approaches typically needed to address listed species issues. When these ecosystem-driven conservation strategies are fully implemented at large geographic scales, the aggregated effect will be the creation of landscapes that should function to conserve landbird communities.

The strategy for achieving functioning ecosystems for landbirds is described through the habitat requirements of “focal species”. By managing for a group of species representative of important components in a functioning coniferous forest ecosystem, many other species and elements of biodiversity also will be conserved. Executive Order 13186 and the MOUs signed by the FS and BLM require agencies to incorporate migratory bird conservation into agency planning processes whenever possible. The PIF plans assist federal agencies in achieving this direction.

In addition to the 2012 conservation plan for Oregon and Washington, a revision of the PIF Conservation Plan for Canada and Continental United States was published in 2016 <http://www.partnersinflight.org/>. This plan provides a watch list of species with highest conservation concern based on species assessment process that includes current data about population distributions, threats and population trends to rate species risk of becoming endangered. Species listed in BCR5 are on the “yellow” watch list which intended to foster proactive conservation of these species to reverse population decline. In addition, the plan identifies for each region common species that are in steep decline with the same goal of proactively managing habitat and reducing threats for these species to reverse population decline.

4. Upper Briggs migratory bird analysis

Upper Briggs is within BCR 5, northern Pacific forest, U.S. only. The 2008 list of birds of conservation concern (BCC) for BCR5 is in Table 20 above. Table 21 lists those BCC on the 2008 list which are not analyzed elsewhere in this BA (such as federally listed species or regionally sensitive species) that could occur in the Upper Briggs watershed. Table 22 displays a list of focal species identified in the 2012 Oregon and Washington PIF conservation plan and additional species from the 2016 PIF species of highest conservation concern at the international scale that could occur in the Upper Briggs watershed; species are grouped by habitat attributes.

Table 19. Habitat attributes of the birds of conservation concern (2008) not covered elsewhere (federally listed, R6 sensitive, PIF focal species in table 22) that could occur in the Upper Briggs Creek watershed.

Forest Condition	Habitat Attribute	Focal Species
Early successional/riparian	Dense riparian shrubs (willow)	Willow Flycatcher
Mature forest	Varied canopy with deciduous; complex structure	Northern goshawk

Table 20. Habitat attributes of PIF focal bird species (2012) and species of highest continental concern (2016) not previously addressed, that could occur in the Upper Briggs Creek watershed (From 2016 PIF: bold = yellow list, *italic* = common in steep decline).

Forest Condition	Habitat Attribute	Focal Species
Old-growth/Mature	Large snags	Pileated Woodpecker
Old-growth/Mature	Large trees	Brown Creeper
Old-Growth/Mature	Deciduous canopy trees	Pacific-slope Flycatcher
Old Growth-Mature	Mid-story tree layers	<i>Varied Thrush</i>
Mature/Young	Closed canopy	Hermit/Townsend's Warbler
Mature/Young	Open mid-story	Hammond's Flycatcher
Mature/Young	Deciduous understory	<i>Wilson's Warbler</i>
Mature/Young	Forest floor complexity	Winter Wren
Young/Pole	Deciduous canopy trees	Black-throated Gray Warbler
Sapling/Seedling	Residual canopy tree	Olive-sided Flycatcher
Sapling/Seedling	Snags	Northern Flicker
Sapling/Seedling	Deciduous vegetation	Orange-crowned Warbler
Unique	Nectar-producing plants	Rufous Hummingbird
Unique	Mineral springs/seeps	Band-tailed Pigeon
Unique	Montane wet meadows	Lincoln's Sparrow
Unique	Large hollow snags	Vaux's Swift
Unique	Landscape mosaic forest	Blue (Sooty) Grouse
Klamath Mts. Mixed Forest	Pine-oak canopy/subcanopy trees	Purple Finch
Klamath Mts. Mixed Forest	Dense shrub understory	Nashville Warbler
Klamath Mts. Mixed Forest	Shrub-herbaceous interspersions	Hermit Thrush
Klamath Mts. Mixed Forest	Forest canopy edges	Western Tanager
Klamath Mts. Mixed Forest	Montane brushfields	Fox Sparrow
Klamath Mts. Mixed Forest	Post-fire	Lazuli Bunting
Conifer Forest	Large patches of moist conifer forest	Chestnut-backed chickadee
Young Forest/Shrub	Open shrub dominated	Mountain quail
Conifer Forest	Forest edge/shrub openings	Evening grosbeak
Conifer Hardwood Forest	Mixed conifer and hardwoods	<i>Pine siskin</i>
Forest edge riparian	Dense, moist vegetation	<i>Allen's hummingbird</i>
Young Forest/Shrub	Dense brush/young plantations	<i>Wrentit</i>

*Appendix F – Comparison of Forest Vegetation Simulator (FVS) models
for Action Alternatives*

Upper Briggs Watershed Restoration Project – Wildlife Report

Table 21. Summarized (averages) FVS results for No Treatment compared to Proposed Treatment Alternatives

Treatment and Timing	TPA 8-18" DBH	TPA 18-24" DBH	TPA >24" DBH	QMD (inches)	BA/AC (ft ²) ≥8" DBH	Canopy Cover (%) Random	Snag/Ac 10-20" DBH	Snag/Ac 20-30" DBH	Snag/Ac ≥ 30" DBH
DELSH									
Current Condition and No Action (Dispersal Units)									
Current Conditions	78	18	20	8	215	71	4.3	0.9	0.6
40 years No Action	72	18	31	16	241	62	12.3	2.1	1.1
Alternative 2 Dispersal Treat and Maintain (23 units)									
Post-Treatment Alt 2 (w/ underburn)	44	11	15	8	179	64	8.4	1.5	0.6
5 Years Post-Treatment Alt 2 (w/ wildland fire)	33	10	15	9	181	61	8.3	1.9	0.9
40 Years Post-Treatment Alt 2	16	7	21	17	228	60	6	3.4	1.2
Alternative 3 Dispersal Treat and Maintain (15 Units)									
Post-Treatment Alt 3 (w/ underburn)				9	177	60	6.9	0.9	0.5
5 Years Post-Treatment Alt 3 (w/ wildland fire)				10	182	58	7.6	1.4	0.8
40 Years Post-Treatment Alt 3				18	234	59	7.8	2.4	1.0
Current Condition and No Action NRF (2 Units)									
Current Conditions	16	12	35	8	213	76	4.7	1.1	0.6
40 years No Action	41	7	40	15	223	66	12.3	2.1	1.1
Alternative 2 NRF Treat and Maintain (2 Units)									
Post-Treatment Alt 2 (w/ underburn)	12	8	26	13	253	62	14	2.7	0.6
5 Years Post-Treatment Alt 2 (w/ wildland fire)	11	7	26	15	253	60	11.5	3.1	0.7
40 Years Post-Treatment Alt 2	10	4	29	22	289	60	6	3.4	1.2
ROADSIDE FMZ									
Current Condition and No Action Dispersal (10 Units)									
Current Conditions	87	13	19	7	225	75	4.6	0.4	0.3
40 years No Action	79	15	25	13	262	70	10.7	2.7	0.6
Alternative 2 Dispersal Treat and Maintain (10 Units)									
Post-Treatment Alt 2	37	6	15	8	174	66	9.3	2.2	0.5
5 Years Post-Treatment Alt 2 (w/ wildland fire)	30	6	15	9	179	65	6.8	1.2	0.5
40 Years Post-Treatment Alt 2	14	6	17	15	231	64	9.7	2.0	0.9
Alternative 3 Dispersal Treat and Maintain (17 units)									
Post-Treatment Alt 3 (w/ underburn)				11	224	66	10	2.2	0.5
5 Years Post-Treatment Alt 3 (w/ wildland fire)				12	227	64	10.1	2.3	0.6
40 Years Post-Treatment Alt 3				19	230	63	7.3	3.2	1

Treatment and Timing	TPA 8-18" DBH	TPA 18-24" DBH	TPA >24" DBH	QMD (inches)	BA/AC (ft ²) ≥8" DBH	Canopy Cover (%) Random	Snag/Ac 10-20" DBH	Snag/Ac 20-30" DBH	Snag/Ac ≥ 30" DBH
ROADSIDE FMZ (continued)									
Current Condition and No Action NRF (3 Units)									
Current Conditions	83	6	48	7	225	75	4.6	0.4	0.3
40 years No Action	61	14	44	16	237	62	12.6	2.7	0.7
Alternative 2 NRF Treat and Maintain (3 Units)									
Post-Treatment Alt 2	30	2	25	9	242	73	9	0.9	0.5
5 Years Post-Treatment Alt 2 (w/ wildland fire)	24	2	24	10	248	72	10.8	0.9	0.5
40 Years Post-Treatment Alt 2	7	7	13	15	272	68	22.3	3.7	1.3
Alternative 3 NRF Treat and Maintain (5 Units)									
Post-Treatment Alt 3				9	224	70	5.2	1.1	0.5
5 Years Post-Treatment Alt 3 (w/ wildland fire)				10	232	70	5.6	1.2	0.5
40 Years Post-Treatment Alt 3				14	291	72	12	2.6	0.8
PINE OAK RESTORATION									
Current Condition and No Action Dispersal (7 Units)									
Current Conditions	108	15	13	9	225	70	5.1	1.3	0.4
40 years No Action	114	27	27	15	284	71	8.8	2.7	1
Alternative 2 Dispersal Treat and Maintain (7 Units)									
Post-Treatment Alt 2 (w/ underburn)	74	9	10	9	186	48	8.9	1.6	0.5
5 Years Post-Treatment Alt 2 (w/ wildland fire)	53	8	9	10	190	46	8.8	1.8	0.5
40 Years Post-Treatment Alt 2	18	12	19	15	235	46	10.4	2.5	0.9
Alternative 3 Dispersal Treat and Maintain (5 Units)									
Post-Treatment Alt 3 (w/ underburn)				9	189	80	10.1	1.9	0.5
5 Years Post-Treatment Alt 3 (w/ wildland fire)				10	193	78	9.9	2.5	0.8
40 Years Post-Treatment Alt 3				16	248	78	11.1	3.0	1.2
Current Condition and No Action NRF (1 Unit)									
Current Conditions	109	21	16	10	237	70	7.8	0.7	0.2
40 years No Action	52	25	32	19	269	71	11.1	2.6	0.7
Alternative 2 NRF Downgrade (1 Unit)									
Post-Treatment Alt 2 (w/ underburn)	51	12	13	10	199	45	10.7	0.8	0.8

Upper Briggs Watershed Restoration Project – Wildlife Report

5 Years Post-Treatment Alt 2 (w/ wildland fire)	36	12	14	11	201	43	11.7	2	1.5
40 Years Post-Treatment Alt 2	8	10	20	19	234	49	13.1	3.6	1.5
Treatment and Timing	TPA 8-18" DBH	TPA 18-24" DBH	TPA >24" DBH	QMD (inches)	BA/AC (ft ²) ≥8" DBH	Canopy Cover (%) Random (No Action) Clumpy (Alt2 & 3)	Snag/Ac 10-20" DBH	Snag/Ac 20-30" DBH	Snag/Ac ≥ 30" DBH
STRATEGIC RIDGELINE FMZ									
Current Condition and No Action Dispersal (11 units)									
Current Conditions	119	29	14	7	184	72	4	0.7	0.4
40 years No Action	79	28	30	15	232	63	11.9	2.3	0.8
Alternative 2 Dispersal Treat and Maintain (11 units)									
Post-Treatment Alt 2 (w/ underburn)	54	11	10	8	172	44	9.5	0.9	0.3
5 Years Post-Treatment Alt 2 (w/ wildland fire)	43	11	12	10	178	43	10.7	1.5	0.8
40 Years Post-Treatment Alt 2	14	11	18	17	230	42	12.3	2.5	0.9
Alternative 3 Dispersal Treat and Maintain (10 Units)									
Post-Treatment Alt 3 (w/ underburn)				8	189	47	8.1	0.8	0.4
5 Years Post-Treatment Alt 3 (w/ wildland fire)				9	197	47	8.7	1	0.5
40 Years Post-Treatment Alt 3				15	252	46	13	2.5	0.8
Current Condition and No Action NRF (8 units)									
Current Conditions	106	16	20	9	217	71	7.5	1.8	0.4
40 years No Action	71	23	31	15	262	67	8.5	3.4	1.1
Alternative 2 NRF Downgrade (8 units)									
Post-Treatment Alt 2 (w/ underburn)	45	8	15	10	204	45	9.6	2	0.4
5 Years Post-Treatment Alt 2 (w/ wildland fire)	36	9	17	12	211	45	10.2	3	1.5
40 Years Post-Treatment Alt 2	9	9	18	18	243	43	10.8	3.6	1.5
Alternative 3 NRF Downgrade (3 Units)									
Post-Treatment Alt 3 (w/ underburn)				10	226	51	13.3	3.5	0.5
5 Years Post-Treatment Alt 3 (w/ wildland fire)				10	235	51	13.1	3.6	0.6
40 Years Post-Treatment Alt 3				15	287	50	11.2	4.8	0.9